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Georgia's Forests

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Photos courtesy of Georgia Forestry Commission.

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Southeastern Forest Experiment Station
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Foreword

In accordance with the Forest and Rangeland Renewable Resources Planning Act (RPA) of 1974, the fifth inventory of Georgia's forests was expanded to accommodate nontimber as well as timber resources. This report presents the principal findings concerning the extent and condition of forest lands, associated timber volumes, and rates of growth and removals. Nontimber evaluations will be dealt with separately.

The field inventory was started in May 1980 and completed in January 1983. Four previous Statewide inventories, completed in 1936, 1953, 1961, and 1972, provide statistics for measuring changes and trends over the past 46 years. Previously reported figures have been adjusted in some cases to provide the best estimate of real change.

RPA and the Forest and Rangeland Renewable Resources Research Act of 1978 authorize these forest inventories and evaluations, a continuing, nationwide undertaking by the Regional Experiment Stations of the Forest Service, USDA. In Florida, Georgia, North Carolina, South Carolina, and Virginia, these appraisals are conducted by the Forest Inventory and Analysis (Forest Survey) Research Work Unit at the Southeastern Forest Experiment Station, with headquarters in Asheville, N.C. The primary objective of these periodic evaluations is to develop and maintain the resource information needed for formulating sound forest policies and programs.

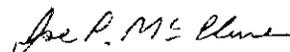
The combined efforts of many people have gone into this inventory and evaluation of Georgia's forest resources. Appreciation is expressed to all Work Unit and Station personnel who participated in the field and office work. The Southeastern Station gratefully acknowledges the cooperation and assistance provided by the Georgia Forestry Commission, Hiwassee Land Company, and the Tennessee Valley Authority. Appreciation is also expressed for the excellent cooperation of other public agencies, forest industries, and private

landowners in providing information and allowing access to the sample locations.

To facilitate both inventory and analysis, Georgia is divided into five areas called Survey Units. A report highlighting the inventory findings and containing detailed data summaries has already been published for each of the Survey Units. Copies of these reports can be obtained from the Southeastern Forest Experiment Station. Information contained in Forest Inventory and Analysis reports includes the most commonly used forest resource statistics, but additional data can often be obtained. A Forest Information Retrieval (FIR) service is available for the custom compilation of forest resource data for any area within the five Southeastern States. Those requesting custom compilations or additional information provided from the raw inventory data are expected to pay the retrieval costs. Costs may range from less than \$100 for a relatively simple request to several thousand dollars for a complex retrieval involving the services of a computer programmer. Although we strive to serve each request promptly, other work will sometimes delay attention to requests of this kind.

Requests for information may be directed to:

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Georgia's Forests

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Highlights

Since the fourth inventory of Georgia's forest resources was completed in 1972—

- *area classified as commercial timberland declined from 24.8 to 23.7 million acres, or by 4 percent.* This net loss in commercial timberland area resulted from land use changes on over 1.8 million acres. Almost 1.5 million acres were either diverted to nonforest or reclassified as noncommercial forest; less than 0.4 million acres of new forest land were added to the commercial forest base. Forest clearing for agriculture accounted for 60 percent of the timberland diversions. Net declines in commercial timberland area occurred in each of Georgia's five Survey Units. Further declines in commercial timberland are almost certain, given current agricultural activity and continued pressures from an increasing population.

- *ownership of more than 2.3 million acres of commercial forest shifted out of farm ownership.* Timberland owned by farmers, and not leased to forest industry, now totals 6.0 million acres. That controlled by other individuals, the dominant ownership class in the State, increased from 8.4 to 8.7 million acres, while the area owned by corporations other than forest industry increased from 1.2 to 1.5 million acres. Commercial forest land under forest industry control (fee simple and leased) increased by almost 0.7 million acres to over 5.9 million acres. Only 7 percent of the timberland is publicly owned—about the same proportion as in 1972.

- *area classified as a pine forest type dropped from 12.4 to 11.4 million acres.* Pine stand harvest without subsequent regeneration to pine accounted for one-half the loss of pine acreage; timberland clearing accounted for another 27 percent. Area of loblolly pine forest type has remained at 5.1 million acres since 1972. In contrast, the acreage of slash, shortleaf, and longleaf pine declined substantially. Oak-pine acreage also dropped, from 3.7 to 3.0 million acres. The area of commercial timberland classified as a hardwood forest type increased from 8.7 to 9.3 million acres. Oak-hickory and oak-gum-cypress are the predominant hardwood types.

- *acreage occupied by pole timber stands declined from 9.0 to 7.7 million acres, while sapling-seedling area dropped from 6.3 to 5.8 million acres.* All the losses in acreage of these small trees occurred in pine and oak-pine types. These changes reflect the maturing of Georgia's pine resource.

Stands dominated by trees of sawtimber size increased from 8.8 to 9.5 million acres; this increase occurred in both pine and hardwood forest types. Fewer than 0.7 million acres were classified as nonstocked in 1982, about the same as in 1972.

- *volume of softwood growing stock on commercial timberland increased from 15.0 to 15.9 billion cubic feet, or by 6 percent.* In comparison, softwood growing stock increased by 32 percent between 1961 and 1972. Softwood gains during the latest period were concentrated in Southeast, Southwest, and North Georgia. Softwood growing stock declined by 1 percent in Central Georgia and increased by less than 2 percent in North Central Georgia. Two-thirds of the Statewide increase occurred on lands owned or leased by forest industry. Softwood inventories on NIPF land increased by only 2 percent. Across all ownerships, almost all the net increase in softwood volume occurred in the 10-inch and larger diameter classes. Volume in the 6-inch class declined by 16 percent and increased by less than 1 percent in the 8-inch diameter class. Volume of loblolly and slash pine growing stock increased by 12 percent; these two species accounted for 81 percent of the total gain in softwood volume. Volume of shortleaf and longleaf pine dropped by 17 percent.

- *volume of hardwood growing stock on commercial timberland increased from 11.7 to 13.7 billion cubic feet and accounted for 69 percent of the total growing-stock increase.* The increase in hardwood volume was rather uniform across the State. Increases were recorded across all diameter classes but were concentrated in the 12-inch and larger diameter classes. Hardwood growing stock increased substantially in all ownership classes. All major hardwood species in Georgia increased in volume.

- *the number of softwood trees in the 2-, 4-, and 6-inch diameter classes has declined by 41, 28, and 17 percent, respectively.* These declines were confined to yellow pine species. These net changes in number of softwood trees mask contrasting changes by ownership class. For instance, on NIPF land declining trends in number of softwoods were found in the 2-, 4-, 6-, and 8-inch diameter classes. On forest industry substantial increases were recorded in the 4-inch through the 10-inch classes. The recent reduction in number of small softwoods and continued pressure from

cutting will affect inventories in the 10-inch and larger classes in the next 10 to 15 years.

- *average rate of annual growth increased from 63 to 74 cubic feet of growing stock per acre of commercial forest land.* Net growth totaled 1.8 billion cubic feet. Hardwoods accounted for only one-third of the total growth but contributed 80 percent of the recent growth increase. By ownership class, average growth ranged from 73 cubic feet per acre on public and NIPF land to 76 cubic feet on forest industry land. While all three owner groups recorded significant increases in per acre growth, forest industry was the only ownership class to show an increase in the rate of softwood growth. In 1981, softwood growth exceeded softwood removals by about 9 percent while hardwood growth exceeded hardwood removals by over 100 percent.

- *about one-half million acres have been harvested annually and retained in commercial forest.* Intermediate cutting occurred on an additional 267,000 acres annually. In 1981, removal of growing stock totaled 1.4 billion cubic feet. Softwood removals accounted for 1.1 billion cubic feet, or 79 percent of the total. Softwood removals have increased by 39 percent since 1971, while hardwood removals have increased by 20 percent. About 80 percent (1.1 billion cubic feet) of the growing stock removed was converted into roundwood products; 10 percent was left in the woods as logging residues; and the remaining 10 percent resulted from cultural practices, land clearing, or other actions where trees were removed from commercial forests but not used.

- *pulpwood remained the leading timber product and accounted for 48 percent of total roundwood output in 1981.* Roundwood made up 83 percent of the total pulpwood production of 662 million cubic feet. Saw logs were the second leading product, accounting for 43 percent of roundwood production. Both softwood and hardwood sawlog production increased—softwood by 71 percent and

hardwood by 42 percent. Peeler logs ranked third, accounting for 5 percent of roundwood output. The use of wood for both domestic and industrial fuel has soared during the last decade.

- *annual rate of stand regeneration averaged 286,000 acres, about 57 percent of the acreage undergoing a final harvest.* About 312,000 acres of pine stands were harvested annually, but only 188,000 acres per year were regenerated to pine. Planting activities accounted for 80 percent of the pine regeneration. Forest industry was the only ownership class for which the acreage regenerated to pine equaled or exceeded the acreage of pine stands harvested. On NIPF land, acreage of pine stands regenerated was less than 35 percent of the acreage of pine stands harvested. The rate of artificial regeneration has increased since the 1961-1972 period on forest industry and public land but has declined on NIPF land.

- *the overall outlook for prospective timber supplies has dimmed.* Projections based on the 1972 conditions estimated a prospective available cut of about 1,733 million cubic feet annually by the year 2001. Similar projections based on the 1982 conditions suggest an estimated available cut of 1,600 million cubic feet by 2001, with a further increase to 1,673 million cubic feet by 2011. The two forecasts are relatively consistent for hardwoods, but the softwood projections have been scaled down based on the more recent findings. The latest projections estimate that hardwoods will account for over 92 percent of the prospective increase in available cut of growing stock. The prospective available softwood cut in 2011 is only 2 percent above the actual cut in 1981. Softwood timber supplies should increase substantially on forest industry land over the next one to two decades in response to the development of large acreages of pine plantations. Much of the current softwood supply on NIPF land exists because of the large-scale abandonment of farmland in past decades. When they are harvested, the majority of these stands are not being replaced with pine.



Forest Trends

Georgia encompasses some 37.2 million acres of land area, of which about 65 percent is classed as forest. Forests occur in a diversity of geographic conditions across the State. Basic differences in geography and land use throughout Georgia necessitate its separation into resource regions or Survey Units (fig. 1). Southeast and Southwest Georgia coincide with the Coastal Plain Physiographic Province, Central and North Central Georgia with the Piedmont Province, and North Georgia with the Mountains. Past surveys have often identified widely differing forest trends in these Survey Units. Forests occupy as much as 75 percent of the land in mountainous North Georgia and as little as 47 percent in agricultural Southwest Georgia.

Commercial Forest Area Down 1.1 Million Acres

When the first Statewide inventory of Georgia was conducted in 1936, commercial forests, or timberland, occupied 21.3 million acres. Subsequent inventories in 1953 and 1961 recorded an increase to 25.8 million acres. This 21 percent increase resulted from the natural reversion and planting of large areas of idle cropland and pasture to forest. Most of the increase in forest land during this period occurred in the Piedmont region. Since 1961, additions of new forest land have diminished and the rate of forest diversions has accelerated. Between 1961 and 1972, the area of commercial timberland declined by nearly 1.0 million acres. The latest inventory indicates that the declining trend is continuing and perhaps accelerating—commercial timberland area dropped by 1.1 million acres between 1972 and 1982. Commercial timberland now totals 23.7 million acres—slightly below 1953 levels—and covers 64 percent of Georgia's land.

The net decrease of 1.1 million acres of commercial timberland over the last 10-year period resulted from land use changes on more than 1.8 million acres. Fewer than 0.4 million acres of new forest were added, while almost 1.5 million acres were diverted to nontimber uses (table I).

Almost three-fourths of the area added to commercial timberland resulted from the natural reversion of idle agricultural land. Tree planting on nonforest land accounted for most of the remaining additions. More than two-thirds of the additions occurred in the two Piedmont Survey Units. Additions to timberland have dropped drastically over the past three to four decades. This decline is attributed to the continued reductions in area classified as idle cropland, the primary source of new forest land. Acreage of idle cropland dropped from 2.1 million acres in 1953 to 0.7 million acres in 1972. The latest inventory recorded 0.6 million acres of idle cropland in Georgia, suggesting that the area of forest-land additions for the near future probably will not rise above present levels.

About 878,000 acres of timberland (60 percent of the diversions) were cleared for agricultural uses. Agriculture accounted for more than half of the total diversions in all Survey Units except North Central and North Georgia. Almost 60 percent of the agricultural diversion was to cropland, primarily in the Southeast, Southwest, and Central Survey Units. Diversions to pasture accounted for the remaining 40 percent and were common throughout the State.

Diversions to urban and other uses totaled 380,000 acres. This category includes residential and industrial developments, roads and highways, utility rights-of-way, and many other uses that are rather permanent. Such diversions were common throughout the State but were most prevalent in the North Central Survey Unit, which includes the Atlanta metropolitan area.

Numerous parks and natural areas were created throughout Georgia and acreage was added to existing ones. Commercial timber harvesting is not permitted there and the acreage is therefore classified as productive-reserved forest. More than 100,000 acres were reclassified to productive-reserved between 1972 and 1982, bringing the total area in this category to nearly one-half million acres. The creation of Lake Oconee in Central Georgia and numerous other small water impoundments throughout the State flooded 92,000 acres previously classified as forest.

The land use trends presented here, plus additional evidence of renewed agricultural activity, suggest that further reductions in commercial timberland in Georgia are almost certain. Acreage of cropland harvested is one measure of agricultural activity. Based on Census of Agriculture statistics, the acreage of cropland harvested fell from 8.8 million acres in 1940 to less than 3.7 million acres in 1969, but has since risen to over 4.7 million acres in 1978. A continued keen interest in the Southeast as a producer of agricultural products combined with an increasing population will no doubt put additional pressures on Georgia's commercial forest base.

Farm Woodland Continues Decline

Area of commercial timberland classified as farmer owned has declined in Georgia, continuing a trend over the past two decades or more throughout much of the Southeast. Commercial timberland owned by farmers, and not leased by forest industry, declined by over 2.3 million acres between 1972 and 1982, and now totals 6.0 million acres. Between 1961 and 1972 farm woodland declined by over 6 million acres. While much of the recent net change was due to forest diversions for agricultural uses, an even larger share was likely attributed to land transactions and changes in owner occupations. The drop in farm timberland ownership occurred throughout the State, and farmer is the largest owner category only in Southwest Georgia.

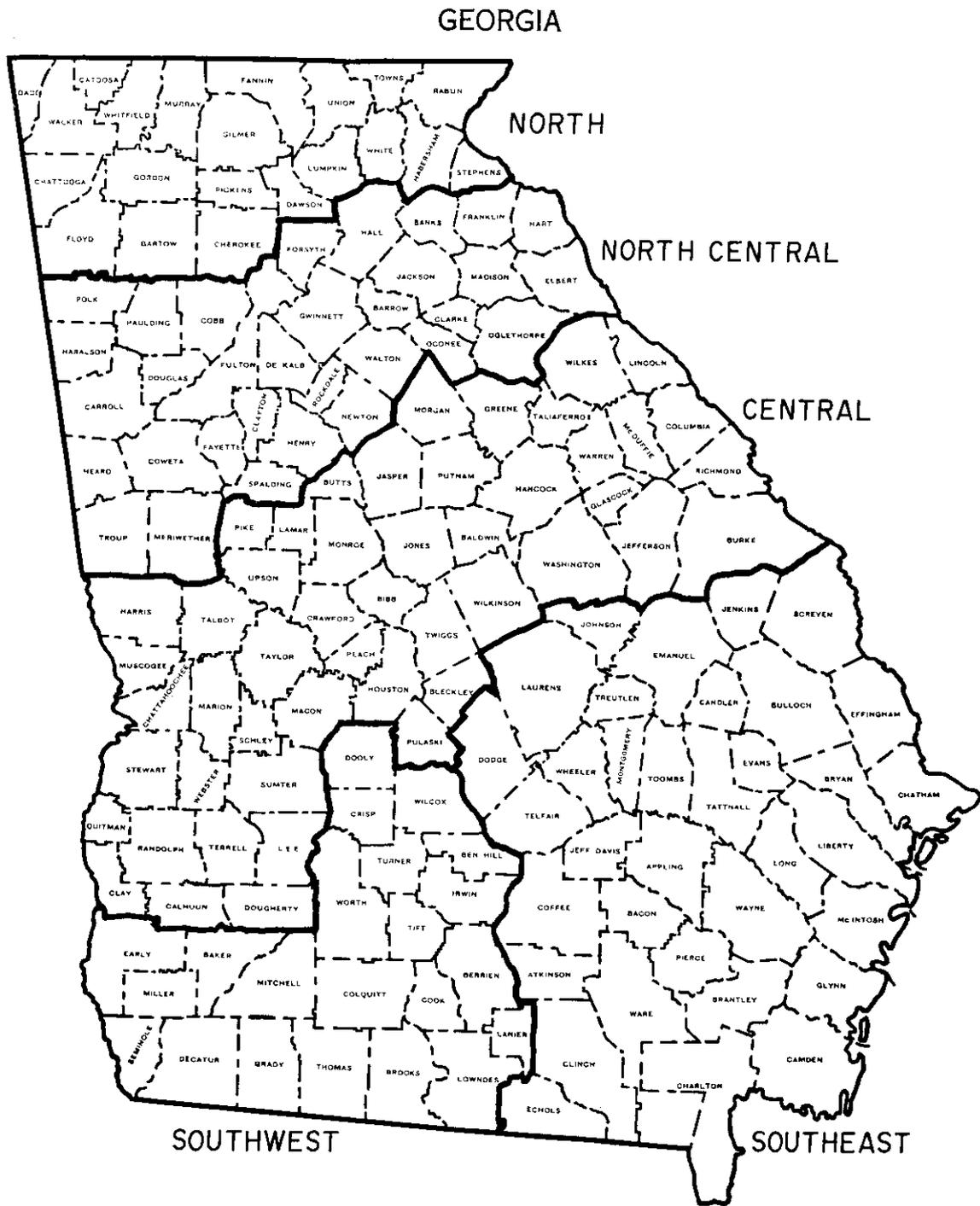


Figure 1.—Forest Survey Units in Georgia.

Table I.--Changes in area of commercial forest land, by Survey Unit, Georgia, 1972-1982

Survey Unit	Area of commercial forest land in--		Net change	Changes							
	1972	1982		Total gain	Additions from--			Total loss	Diversions to--		
					Nonforest	Noncommercial forest	Noncommercial forest		Agriculture	Urban and other	Water
----- Thousand acres -----											
Southeast	7,429.0	7,164.9	-264.1	55.3	50.2	5.1	319.4	48.3	198.3	72.8	--
Southwest	2,883.8	2,636.3	-247.5	39.0	30.1	8.9	286.5	3.0	242.3	41.2	--
Central	7,321.9	7,020.7	-301.2	138.3	137.3	1.0	439.5	1.7	294.8	91.0	52.0
North Central	3,999.2	3,815.0	-184.2	111.6	111.6	--	295.8	6.8	110.1	142.2	36.7
North	3,192.5	3,096.8	-95.7	24.3	23.7	.6	120.0	50.6	32.9	32.9	3.6
State	24,826.4	23,733.7	-1,092.7	368.5	352.9	15.6	1,461.2	110.4	878.4	380.1	92.3

There were small increases in the acreage of commercial timberland owned by other individuals and other corporate owners (formerly referred to as miscellaneous private, individual and corporate classes). Area of commercial timberland under the control of other individuals increased 3 percent between 1972 and 1982, from 8.4 to 8.7 million acres. This diverse group of owners represents the largest single source of timber in Georgia. The other corporate category includes all corporations not classified as forest industry. Acreage of commercial timberland under other corporate control increased from 1.2 to 1.5 million acres between 1972 and 1982.

The foregoing changes translate into a net loss of nearly 1.8 million acres in the other private or nonindustrial private forest (NIPF) ownership class. NIPF owners currently control 16.2 million acres, or 68 percent of the commercial forest land in Georgia.

Previous reports have usually included in the NIPF ownership class forest acres owned by NIPF owners but leased to forest industries under long-term contracts (one forest rotation or longer). The tables in this report and accompanying discussion treat forest industry-leased land as a separate category or include such land with that of forest industry. Because of this change, a direct comparison of ownership between previous reports and this Bulletin may not be valid.

Forest industries in Georgia have increased their fee-simple holdings from 4.3 million acres in 1972 to nearly 5.0 million acres in 1982. They lease almost 1.0 million additional acres of commercial timberland from NIPF owners. These two sources give forest industry control of timber supplies on 25 percent of the commercial timberland in the State.

Little change in the total acreage of commercial timberland held by public agencies has occurred since 1972. Only 1.6 million acres of commercial forest, 7 percent of the State total, are publicly owned. Major public holdings include the Chattahoochee and Oconee National Forests; Fort Benning, Fort Gordon, and Fort Stewart military reservations; Dixon

Memorial Forest; Piedmont National Wildlife Refuge; and land around major reservoirs constructed by the U.S. Army Corps of Engineers.

Pine Forests Drop 1.0 Million Acres

Since 1972, the area of commercial forest land in Georgia in pine forest types has declined by 1.0 million acres, from 12.4 to 11.4 million acres. One half of the total decline in pine type occurred after final harvests of pine stands. Some 3.2 million acres of pine stands were harvested between 1972 and 1982. About 1.0 million of these harvested pine acres were artificially regenerated; over 95 percent of the planted areas remained in pine forest type. On the remaining 2.2 million acres of harvested pine stands, pine stocking is sufficient for classification as a pine forest type in only 41 percent of the area. These findings point out the likely results when the regeneration of harvested pine stands is left entirely to nature.

The other major action contributing to the pine-type decline was land clearing, which accounted for 27 percent of the total loss. About one-half of the commercial timberland diversions were pine stands.

In contrast to the significant drop in area of all pine types, the acreage of loblolly pine forest type has remained at 5.1 million acres since 1972. Loblolly is the pine most often planted in Georgia. It is the dominant softwood in Central, North Central, and North Georgia where vast areas of abandoned farmland seeded to loblolly pine in the 1940's, 1950's, and early 1960's. Whereas the acreage of loblolly pine stands decreased in this portion of the State between 1972 and 1982, the type increased substantially in Southeast Georgia. Although slash pine is still the predominant species used in timber management in this area, loblolly pine is now commonly used on many sites just recently the domain of slash pine.

Slash pine is the dominant species in both Southeast and Southwest Georgia. Statewide, the area of slash pine forest

type has declined by nearly 0.5 million acres, or by 10 percent, and now totals less than 4.1 million acres. Between 1953 and 1972, surveys recorded healthy increases in slash pine acreage. The decline in slash pine acreage is attributed to planting of loblolly pine or failure to regenerate to pine after harvest of slash pine stands. Slash pine losses account for over 42 percent of the total pine-type loss in the State.

Area of commercial timberland classified as shortleaf or longleaf pine forest type has continued a decline dating back several decades. Shortleaf pine type has declined by 0.4 million acres, or by 30 percent, since 1972. Shortleaf pine stands covered over 2 million acres just 30 years ago but now cover only 0.9 million acres. At the time of the first survey of Georgia in 1936, longleaf pine stands occupied over 4 million acres. As these stands were harvested, many were replaced with slash and loblolly pine stands; still others were dominated by hardwoods as fire protection improved. Today, less than 0.7 million acres are classified as longleaf pine in Georgia, 18 percent less than in 1972.

Oak-pine stands represent another major forest type in Georgia, occupying almost 3.0 million acres. Many of these stands resulted from the harvesting of pine stands to a minimum diameter, leaving some pine trees with hardwoods beneath them. Still others result from establishment of hardwoods along with pines after harvest of a pine stand.

In the oak-pine type, pines make up at least 25 but less than 50 percent of the tree stocking. Because of this narrow range of pine stocking, stands move to and from this type more often than from other types. Almost 63 percent of the oak-pine stands in 1972 were classified as pine or hardwood in 1982. The shifts out of and into oak-pine type between 1972 and 1982 resulted in a net loss of 0.7 million acres—a 20 percent drop. Although significant, this decline is not as sharp as that suggested by comparing the 1972 reported acreage with the current estimate. In 1972, sample plots were allowed to straddle two or more forest conditions. When one portion of a sample plot was in a pine stand and the other in an oak-hickory stand, the area was often classified as oak-pine. Thus, the area of oak-pine was inflated and the area for most other types underestimated. All forest-type trends in this report reflect the use of adjusted 1972 forest-type acreages.

In contrast to the downward trend for stands containing significant numbers of pine trees is the increase in the area of commercial timberland classified as a hardwood forest type from 8.7 to 9.3 million acres between 1972 and 1982. This trend toward dominance by hardwood types dates from the first survey in 1936. By far the most significant activity contributing to the recent increase in hardwood acreage was the harvest of pine and oak-pine stands without subsequent

pine planting. Hardwoods commonly form dense understories in pine stands and replace the pines following harvest if site preparation or other control measures are not used.

Oak-hickory is the leading hardwood forest type in Georgia, occupying 5.5 million acres. The type is widespread in its occurrence and diverse in species composition. It is the prevalent hardwood type in Central, North Central, and North Georgia. Oak-gum-cypress is the second most abundant hardwood type, covering nearly 3.1 million acres. It is the dominant hardwood type in Southeast and Southwest Georgia.

Fewer Poletimber and Sapling-Seedling Stands

A substantial portion of Georgia's pine resource became established on idle farmland during the 1940's, 1950's, and early 1960's. Changes in acreage by stand size during the past 10 years reflect the maturing of these stands. Since 1972, the area of commercial timberland classified as poletimber has dropped by 1.3 million acres, or by 15 percent. Sapling-seedling stands declined by over 0.5 million acres, or by nearly 9 percent, during the same period. All of these recent declines occurred in pine and oak-pine forests; increases in hardwood sapling-seedling and poletimber stands were recorded during the past decade.

Sawtimber stands increased by more than 0.7 million acres—8 percent—between 1972 and 1982. This increase occurred in both pine and hardwood forest types. Sawtimber stands are now the dominant stand-size class in Georgia, occupying 40 percent of the commercial forests. Sawtimber stands currently occupy 9.5 million acres, poletimber stands 7.7 million acres, and sapling-seedling stands 5.8 million acres. In 1961, sapling-seedling stands dominated Georgia's forests with over 11.7 million acres.

Only 3 percent of the commercial timberland in Georgia was classified as nonstocked—less than 16.7 percent stocked with growing-stock trees. Nonstocked acreage changed little during the past 10 years.

Current stand-size distributions differ significantly by ownership class. Across all forest types, sawtimber stands account for 58 percent of National Forest and other public forests, only 26 percent of timberland owned or leased by forest industry, and 43 percent of NIPF land. Sapling-seedling and poletimber stands dominate forest industry land. Forest industries control 38 percent of all sapling-seedling stands and 26 percent of all poletimber stands. Forest industries will control an increasing proportion of the pine timber supply in future years because over 53 percent of all pine sapling-seedling stands are under their control. NIPF land should continue to provide a major share of pine supplies in the short run since two-thirds of the pine poletimber and

sawtimber stands are on NIPF land. About three-fourths of all hardwood stands, regardless of size classification, are under NIPF control.

Buildup in Timber Inventory Moderates

Volume of growing stock on commercial timberland in Georgia increased from 26.7 to 29.6 billion cubic feet, or by 11 percent, between 1972 and 1982. The increase in inventory has moderated since the last survey when a 29-percent increase was recorded. Most of this slowdown in inventory buildup occurred in softwoods. During the latest remeasurement period, volume of softwood growing stock increased from 15.0 to 15.9 billion cubic feet, an increase of 6 percent. Between 1961 and 1972, softwood growing stock rose by 32 percent. Softwoods currently make up 54 percent of the total growing stock. Volume of hardwood growing stock continued to increase at a substantial rate, from 11.7 to 13.7 billion cubic feet since 1972.

Reasons for the moderation in inventory buildup can be

found in the contrasting changes in softwood growth and removals over the past two decades. Softwood net annual growth leveled off during this period, whereas removals of softwoods accelerated (fig. 2). Hardwood growth has continued to increase at a steady rate throughout the past two decades, outpacing recent increases in removals.

Changes in timber inventory differ somewhat by Survey Unit and species group. The increases in hardwood volume were rather uniform across the State; they were generally distributed in proportion to standing hardwood inventory in each resource area. Softwood inventory gains were concentrated in the Coastal Plain and Mountain Survey Units. Volume of softwood growing stock rose by 15 percent in Southwest Georgia, and by 10 percent in Southeast and North Georgia. Softwood growing stock declined by 1 percent in Central Georgia and increased by less than 2 percent in North Central Georgia. These two Survey Units accounted for 62 percent of the softwood-volume increase between 1961 and 1972.

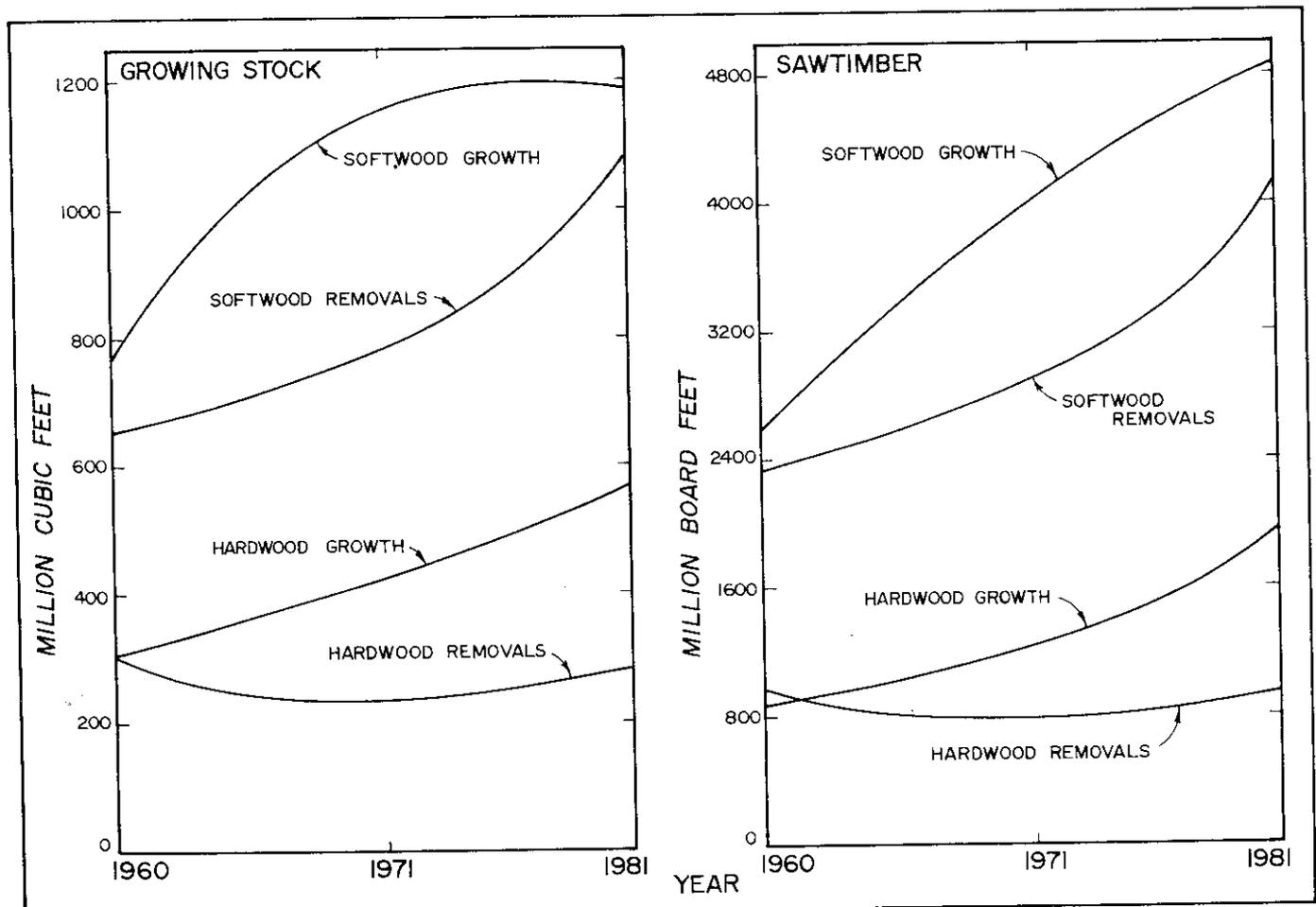


Figure 2.— Trends in net growth and timber removals in Georgia since 1960.

Two-thirds of the recent softwood volume increase occurred on land owned or leased by forest industry. Many of the young pine plantations on forest industry land in the Coastal Plain developed to poletimber size during the period. On NIPF land, softwood inventories increased by only 2 percent and accounted for 21 percent of the total softwood gain. NIPF pine stands are more mature than those of forest industry and have the lower average growth rates associated with older ages. Changes in acreage for these two owner groups have also affected volume changes. Softwood volume on public land was up by 10 percent. For hardwoods, increases in growing-stock volume were substantial on all ownership classes, ranging from 15 percent on NIPF land to 24 percent for public forests.

The volume increase for softwoods was primarily confined to trees in the 10-inch and larger diameter classes (fig. 3). Volume of softwood growing stock declined by 16 percent in the 6-inch diameter class and increased by less than 1 percent in the 8-inch class. The volume increase in most larger diameter classes has slowed considerably compared with the increases recorded between 1961 and 1972. Cur-

rent softwood volume peaks in the 10-inch diameter class. An upward shift in the volume distribution during the latest decade suggests that a high proportion of the pine trees established on abandoned farmland in earlier decades has now developed to sawtimber size. The rapid drop in volume for trees in the 12-inch and larger diameter classes is due primarily to timber cutting from these classes. The proportion of softwood timber supplies coming from larger diameter classes will probably be higher in the next one to two decades than it has been in the past 10 to 20 years.

Hardwood growing-stock volume increased across the range of diameter classes (fig. 4). However, the rate of increase in the smaller diameter classes (6-, 8-, and 10-inch) slowed considerably compared with that of the previous re-measurement period. More than 78 percent of the recent increase in hardwood volume occurred in trees 11.0 inches d.b.h. and larger. Continuing increases in the volume of hardwoods in the larger diameter classes would suggest that supplies for solid-wood products should be ample. Yet, this scenerio does not always hold true for hardwood markets. The demand for high-quality hardwoods is high and probably

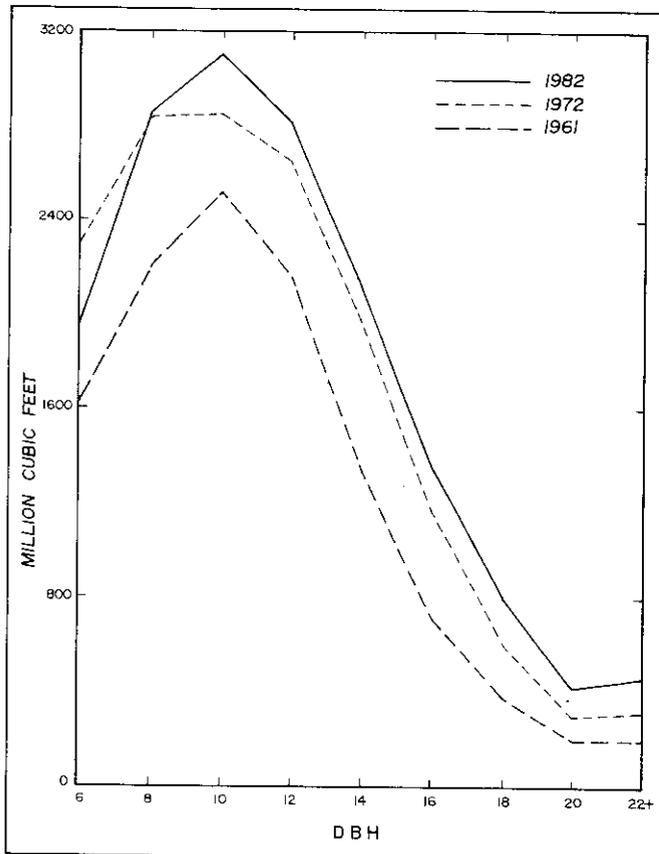


Figure 3. — Volume of softwood growing stock, by tree diameter, 1961, 1972, and 1982.

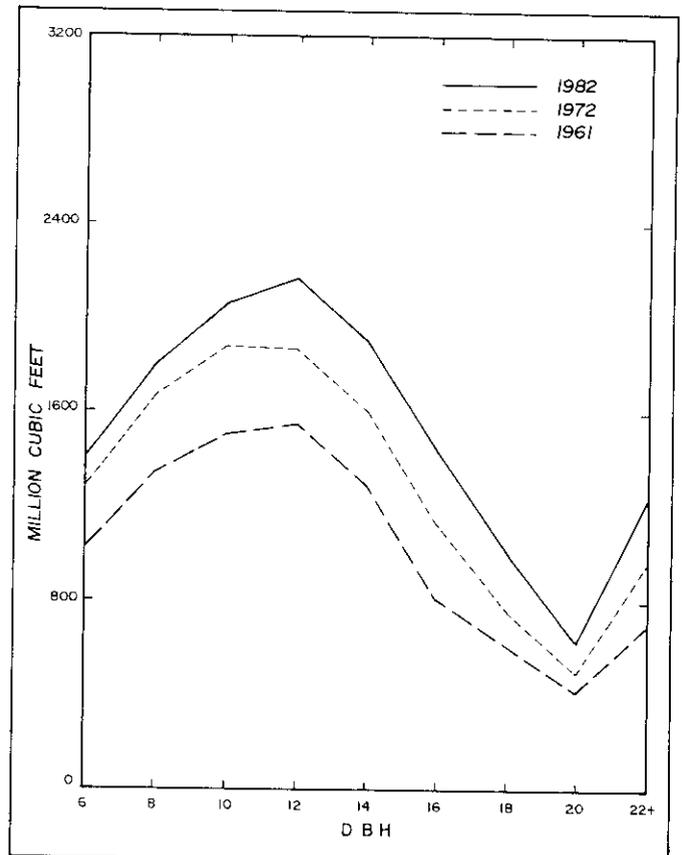


Figure 4. — Volume of hardwood growing stock, by tree diameter, 1961, 1972, and 1982.

will remain so. Supplies of high-quality hardwood are not sufficient according to many hardwood consumers. The answer to this paradox is not known but is probably found in the heterogeneous nature of typical hardwood stands. Such stands usually contain a mixture of species, tree sizes, and grades. Preferred species and material may make up only a small part of the total volume in these stands, with the remaining material essentially unmarketable. The desired species and material are economically unavailable in such cases.

The inventory of growing stock includes 89.2 billion board feet of sawtimber—up 18 percent more than in 1972. Softwood sawtimber volume increased by 14 percent and hardwood by 24 percent. By Survey Unit and species group, the buildup in sawtimber followed much the same pattern as described for the smaller increase in growing stock. However, substantial increases in softwood sawtimber were recorded in each of the Survey Units. In contrast to the concentration of softwood growing-stock gains on forest industry land, most of the increase in softwood sawtimber occurred on NIPF land. Volume of softwood sawtimber on NIPF land increased by 15 percent and accounted for more than three-fourths of the total softwood sawtimber gain. In-

creases in volume of softwood sawtimber were 7 percent on forest industry land and 18 percent on public land. Hardwood sawtimber increased substantially on all ownerships, by 23 percent on public and NIPF and 26 percent on forest industry land.

Number of Small-Diameter Softwoods Drop

Number of 2-, 4-, and 6-inch softwood trees on commercial timberland in Georgia declined by 41, 28, and 17 percent, respectively, between 1972 and 1982 (table II). Softwood stems in the 8-inch diameter class remained about the same, but softwoods in the larger diameters increased in number. Declines in small-diameter softwoods were confined entirely to yellow pine species.

For all ownerships, the stand table changes are essentially identical to the volume changes by species group and diameter class. Softwood stand table changes for the three major ownership groups are quite different. On public forest, softwood numbers declined substantially in the 2-, 4-, and 6-inch diameter classes, remained about the same in the 8- and 10-inch classes, and increased in the larger sizes. These changes are consistent with the longer rotations and older

Table II.--Number of all live softwood and hardwood trees on commercial forest land, by diameter and ownership classes, 1982, and change between 1972 and 1982, Georgia

Diameter class	All ownerships		Public		Forest industry ^a		Other private	
	Inventory 1982	Change 1972-1982	Inventory 1982	Change 1972-1982	Inventory 1982	Change 1972-1982	Inventory 1982	Change 1972-1982
SOFTWOODS								
(in million trees)								
2	1,782.0	-1,238.1	109.3	-19.9	613.5	-140.2	1,059.2	-1,078.0
4	1,184.3	-450.7	56.2	-7.6	474.8	+52.3	653.3	-495.4
6	778.0	-156.8	30.1	-8.8	305.5	+87.2	442.4	-235.2
8	477.0	+9	23.8	+1	148.5	+42.9	304.7	-42.1
10	270.3	+22.7	16.8	-1	63.1	+12.7	190.4	+10.1
12	149.2	+9.4	11.1	+2	29.0	+4	109.1	+8.8
14	76.5	+5.7	7.5	+6	13.5	-.3	55.5	+5.4
16+	62.8	+12.4	8.3	+1.6	10.9	+1.3	43.6	+9.5
HARDWOODS								
(in million trees)								
2	7,477.7	-529.0	526.2	-29.2	1,820.6	+244.3	5,130.9	-744.1
4	1,937.4	+9.5	159.8	+21.2	389.1	+42.6	1,388.5	-54.3
6	762.1	+62.8	70.6	+15.8	136.9	+27.4	554.6	+19.6
8	388.4	+28.8	36.5	+7.4	69.1	+11.6	282.8	+9.8
10	229.5	+20.3	20.0	+2.4	38.2	+5.6	171.3	+12.3
12	141.8	+20.0	12.9	+2.3	22.3	+2.8	106.6	+14.9
14	83.4	+13.1	8.4	+1.5	14.9	+2.2	60.1	+9.4
16+	103.2	+22.7	11.7	+2.2	19.7	+5.1	71.8	+15.4

^aIncluding inventory on lands under long-term lease.

ages of pine stands on public land. Short-rotation pine management on much of the forest industry land in Georgia is reflected by the sizable increases in number of softwoods in the 4-, 6-, 8-, and 10-inch diameter classes. Number of 2-inch softwoods on forest industry declined by 19 percent despite increased planting activity. This decline is attributed to increased proportion of industry pine sapling stands that are planted. Planted stands contain fewer pine stems per acre, and the stems grow into the 4-inch class more rapidly than in natural stands. Also, recent plantations were established at lower densities than those established 15 to 20 years ago.

Small-diameter softwood losses were most severe on other private or NIPF land—50 percent in the 2-inch diameter class, 43 percent in the 4-inch class, 35 percent in the 6-inch class and 12 percent in the 8-inch diameter class. Increases in softwood trees were recorded in the 10-inch and larger diameter classes. The drop in number of small softwoods on NIPF land is attributed to the large acreage of pine stands, mostly natural, which became established on abandoned farmland before 1965. The bulk of these stands are now between 21 and 40 years of age (see Appendix table 12). This concentration of stands boosted the number of small softwoods in previous inventories to artificially high levels—levels not sustainable at present rates of pine stand establishment on NIPF land. Recent reductions in number of softwoods up through the 8-inch diameter class on NIPF land should filter upward in the stand table with time and result in reductions in softwood volume in the 10-inch and larger classes.

Compared with softwoods, hardwood stand table changes are more consistent across diameter and ownership classes. Across all ownerships, substantial increases in hardwood numbers were recorded in all but the 2-inch diameter class in which a 7-percent drop occurred. The largest gains were in the 10-inch and larger classes. Increasing numbers of hardwoods were observed in all but the 2-inch class on public forests, in all classes on forest industry land, and in all but the 2- and 4-inch diameter classes on NIPF land.

Loblolly and Slash Pine Dominate the Growing Stock

Loblolly and slash pine are the two most dominant species in Georgia in terms of growing-stock volume. These species are almost the only ones used in pine plantations, and they also account for most natural pine stands in the State. Volume of loblolly and slash pine growing stock increased by 12 percent since 1972 (fig. 5). The two species accounted for 81 percent of the total gain in softwood growing stock.

Volume of loblolly growing stock currently totals 6.9 billion cubic feet, or 44 percent of the softwood total. Except for the mountainous northeast corner of the State, loblolly

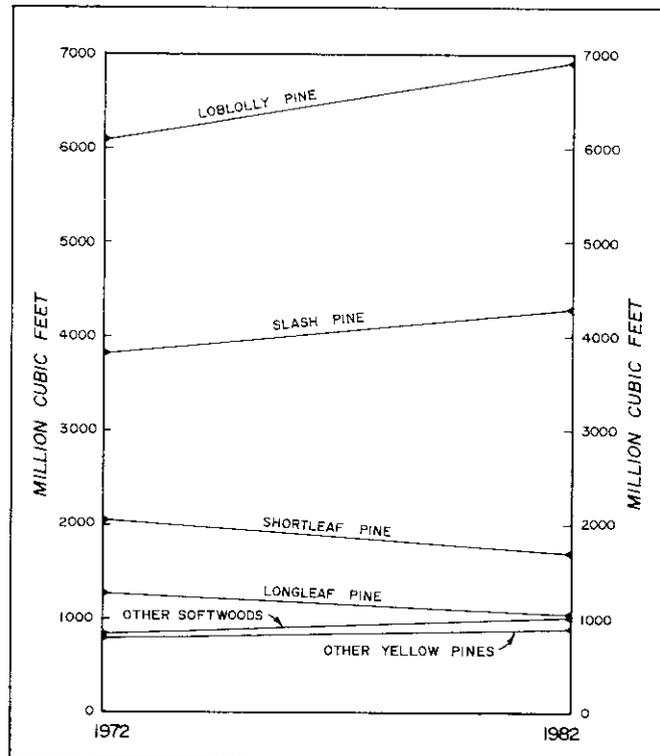


Figure 5.—Change in volume of softwood growing stock, by species, 1972 to 1982.

pine is indigenous throughout Georgia, but is most common in the Central and North Central Survey Units. It grows well on a broad range of sites, and is widely planted; it is now favored on many sites formerly planted with slash pine. Volume of slash pine totals 4.3 billion cubic feet, or 27 percent of the softwood growing stock. Slash pine is generally confined to the Coastal Plain of Georgia, although a number of slash pine plantations were established in the Piedmont in earlier years. The acreage of slash pine forest type has turned downward throughout the State in recent years, and volume of slash pine will likely stabilize and possibly decline in the next one to two decades.

Volume of shortleaf and longleaf pine dropped by 17 percent between 1972 and 1982; it is declining throughout much of the Southeast. Little effort is expended to regenerate stands of these species. Volume of most other yellow pine and other softwood species increased during the latest remeasurement period.

All major hardwood species in Georgia increased in growing-stock volume between 1972 and 1982 (fig. 6). Collectively, a wide variety of oak species made up 40 percent of the hardwood total and accounted for 45 percent of the increase in hardwood growing stock. Species in the other red oak group were most common, totaling 3.1 billion cubic

feet. The most common species in this group are laurel oak, water oak, southern red oak, scarlet oak, and black oak. Select white and red oaks account for over 1.4 billion cubic feet. Tupelo and blackgum, sweetgum, and yellow-poplar, all common species in Georgia, collectively account for 5.5 billion cubic feet of hardwood growing stock. These species made up 38 percent of the hardwood gain.

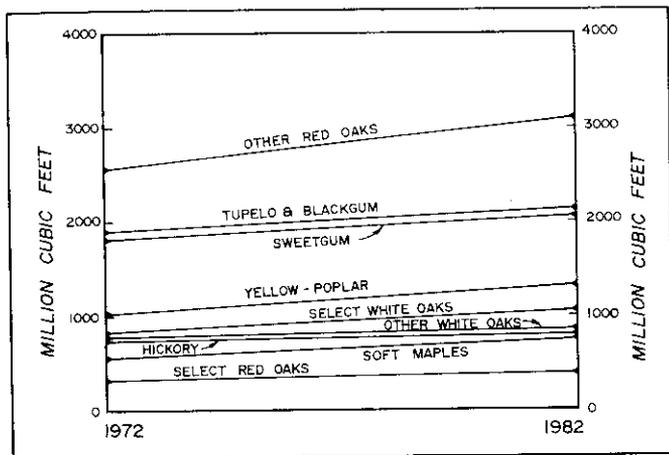


Figure 6.—Change in volume of hardwood growing stock, by species, 1972 to 1982.

Large Quantities of Non-Growing-Stock Wood Exist

While estimates of growing stock and sawtimber volume are the customary measures of timber inventory, the total quantity of wood and bark is emerging as an important inventory item. Estimates of growing stock exclude a considerable amount of wood suitable only for low-value products. The advent of whole-tree chipping, the manufacture of products from chips, and increased fuelwood use (both domestic and industrial) make these non-growing-stock volumes an increasingly important resource.

The 1982 inventory measured an additional 1.8 billion cubic feet of timber (to conventional merchantability standards) in trees failing to qualify as growing stock because of species, poor form, or excessive internal rot. Hardwoods accounted for 95 percent of this additional volume. Conventional volumes include only the net volume in trees 5.0 inches d.b.h. and larger, from a 1-foot stump to a minimum 4.0-inch top diameter outside bark. Inclusion of the volume in stumps, in tops and limbs, and in saplings added another 12.8 billion cubic feet to the inventory. This total volume represents a 41-percent increase over the conventional (merchantable) volume of all live trees and 49 percent more volume than growing stock. In terms of green weight of wood and bark, this total inventory is equivalent to 1.7 billion tons

of forest biomass, an average of 70 tons per acre of commercial forest.

The feasibility of utilizing the total inventory is variable, depending on tree size, stand conditions, and a host of other factors—primarily economic ones. From a silvicultural standpoint, much more of the total biomass in stands should be removed than has been removed in conventional harvests. Over the past remeasurement period in Georgia, harvested stands were left with standing inventories averaging 23 tons per acre. Averages ranged from 4 tons per acre for harvested pine plantations to 46 tons per acre for harvested lowland hardwood stands. These values do not include logging residues and logging slash—the total volume of trees killed during the logging operation but not removed for products. More adequate and vigorous regeneration would result if more of these residuals were removed during the logging operation.

Annual Growth Averages 74 Cubic Feet Per Acre

In 1981, net annual growth of growing-stock timber averaged 74 cubic feet per acre of commercial forest land, compared with 63 cubic feet in 1971. Because of the significant reduction in acreage, total net growth increased less rapidly, rising from 1.6 to 1.8 billion cubic feet. Hardwood growth increased by 34 percent and accounted for 80 percent of the total increase. Softwood growth increased by only 3 percent; however, softwoods account for two-thirds of the current total growth. Trends in growth and removals by species (see fig. 2) point to future inventories with a higher proportion of hardwood than currently exists.

By ownership, average growth per acre ranged from 73 cubic feet on other private or NIPF land to 76 cubic feet on forest industry (including leased) and public forests. All three owner groups recorded significant increases in average growth per acre since 1971 (fig. 7). However, forest industry was the only ownership class to show a significant increase in the rate of softwood growth. Across all forest types on timberland controlled by forest industry, softwood growth has increased from 48 to 60 cubic feet per acre, while softwood growth on other ownerships has remained around 47 cubic feet. The softwood growth increase on forest industry can be attributed to the relatively high growth rates of its young pine plantations. Many of these plantations developed from sapling-seedling to poletimber size during the period. Since forest industry gained acreage over the past remeasurement period and NIPF owners lost, the industry share of total softwood net growth has risen sharply. Total softwood net growth on industry land increased from 251 to 357 million cubic feet but declined from 829 to 759 million cubic feet on NIPF land.

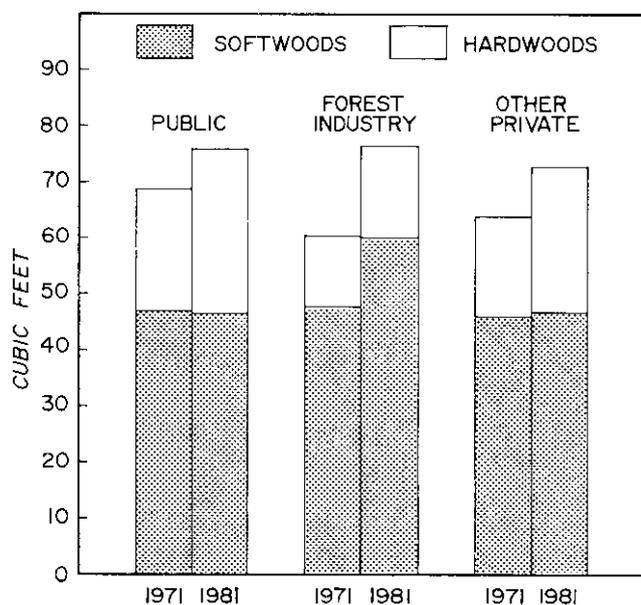


Figure 7.—Change in average net annual growth per acre of commercial forest land, by ownership class and species group, 1971 to 1981.

A detailed breakdown of gross growth into its various components, by Survey Unit and species group, along with the distribution of mortality and removals, identifies the recent sources of annual change in timber volume (table III). For all species, survivor growth, the volume increment on growing-stock trees 5.0 inches d.b.h. and larger in the inventory at the beginning of the year and surviving to its end, accounted for 84 percent of gross growth. Ingrowth, the net volume of growing-stock trees reaching 5.0 inches d.b.h. during the year, and subsequent growth on these trees, accounted for another 13 percent. Growth on removals before removal, and growth on mortality before death, made up the remaining 3 percent.

By region, average growth per acre ranged from a high of 86 cubic feet per acre in Southwest Georgia to a low of 57 cubic feet in North Georgia. Total hardwood growth increased significantly in each of the Survey Units, but softwood growth increases were confined to the Coastal Plain. Here, softwood net annual growth increased by 30 percent between 1971 and 1981. Forest industry pine plantations established prior to 1972 are concentrated in Southeast Georgia; rapid growth of these and other young pine stands in the region helped boost softwood growth. The development of many pine plantations in Southeast Georgia from sapling-seedling to poletimber size resulted in an increase in the volume of softwood ingrowth in this region in 1981 compared with 1971. In all other Survey Units in

Georgia, volume of softwood ingrowth has declined. The increase in total volume of softwood growth in southern Georgia was nearly offset by declines in softwood growth in the three northern Survey Units. Collectively, net annual growth of softwoods in these regions declined by 105 million cubic feet, or by 15 percent. Softwood mortality in Central, North Central, and North Georgia was abnormally high during the past remeasurement period, primarily due to southern pine beetle infestations. Softwood mortality across this region reduced potential net growth by 20 percent. Another factor involved in the reduction of softwood net growth in this region was the abnormally high ingrowth rates associated with the 1971 softwood growth. Ingrowth of saplings into the pole-timber class accounted for as much as 27 percent of total softwood growth in some areas in 1971. Ingrowth rates have now dropped to about half the previous levels in these three Survey Units.

A final reason for the decline in softwood net growth in the northern portion of Georgia was a reduction in average annual diameter growth across the range of tree sizes for pine species. While slight reductions were noted in southern Georgia, the drop in radial diameter increment was most severe in the Piedmont and Mountain Provinces. Reasons for the decline are not known, but drought and other meteorological factors are suspected.

In 1981, mortality of growing stock totaled 311 million cubic feet and reduced gross growth by 15 percent. Compared with mortality estimates for 1971, 1981 estimates of mortality were up by 46 percent for hardwoods and by 145 percent for softwoods. Softwoods accounted for two-thirds of the mortality. Mortality losses included 872 million board feet of sawtimber. Southern pine beetle populations in Georgia were epidemic for several years of the latest remeasurement period. The abnormally high infestation rate is reflected in the mortality increases for softwood. Insects were the leading identifiable cause of death for softwoods followed by disease. Disease and weather were the leading identifiable causes for hardwoods. Fire accounted for only 2 percent of the mortality in Georgia.

Table III.--Annual components of change in the volume of growing stock on commercial forest land, by Survey Unit and species group, Georgia, 1981

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 -----										
Southeast:										
Softwood	485.7	390.7	69.9	5.6	17.5	2.0	43.1	442.6	417.5	+25.1
Hardwood	135.6	113.0	19.4	1.1	1.6	.5	23.1	112.5	55.7	+56.8
Total	621.3	503.7	89.3	6.7	19.1	2.5	66.2	555.1	473.2	+81.9
Southwest:										
Softwood	186.8	158.6	19.5	2.0	5.8	.9	20.3	166.5	130.4	+36.1
Hardwood	71.7	58.8	10.9	.6	1.0	.4	12.7	59.0	29.9	+29.1
Total	258.5	217.4	30.4	2.6	6.8	1.3	33.0	225.5	160.3	+65.2
Central:										
Softwood	389.8	333.5	36.5	3.4	13.1	3.3	74.6	315.2	319.5	-4.3
Hardwood	226.2	193.1	26.6	1.7	3.7	1.1	36.2	190.0	114.2	+75.8
Total	616.0	526.6	63.1	5.1	16.8	4.4	110.8	505.2	433.7	+71.5
North Central:										
Softwood	221.9	188.6	22.5	2.1	6.5	2.2	49.7	172.2	159.6	+12.6
Hardwood	138.8	120.6	14.6	1.1	1.9	.6	18.4	120.4	57.6	+62.8
Total	360.7	309.2	37.1	3.2	8.4	2.8	68.1	292.6	217.2	+75.4
North:										
Softwood	112.1	95.7	12.4	1.1	2.2	.7	19.0	93.1	59.7	+33.4
Hardwood	98.9	85.3	12.0	.7	.6	.3	14.1	84.8	23.9	+60.9
Total	211.0	181.0	24.4	1.8	2.8	1.0	33.1	177.9	83.6	+94.3
State:										
Softwood	1,396.3	1,167.1	160.8	14.2	45.1	9.1	206.7	1,189.6	1,086.7	+102.9
Hardwood	671.2	570.8	83.5	5.2	8.8	2.9	104.5	566.7	281.3	+285.4
Total	2,067.5	1,737.9	244.3	19.4	53.9	12.0	311.2	1,756.3	1,368.0	+388.3



Timber Products Output

The forest products industry is the second largest manufacturing industry in Georgia, exceeded only by textiles. Based on statistics compiled by the U.S. Department of Commerce for 1979, nearly 2,000 firms were associated with the forest products industry, including logging contractors.¹ These firms employed nearly 64,000 people and generated an annual payroll of about \$836 million. These statistics reflect the importance of Georgia's forest resources for only one use—the consumption of timber for forest products. Many other uses—both consumptive and nonconsumptive—make the forest an invaluable natural resource.

This section and associated Appendix tables contain estimates of timber removals and timber products output in Georgia for calendar year 1981. Total timber removals were developed from the remeasurement of permanent sample locations. Annual removals assigned to a single year (1981) are based on average removal rates between 1971 and 1981. Estimates of wood receipts, product output, and plant residues were obtained through a canvass of all primary wood-using plants in the State; this study was conducted for calendar year 1980. Some 330 primary wood-using plants operated in Georgia in 1980 (fig. 8). Finally, utilization factors for each of the roundwood products and estimates of logging residues were developed from the measurement of felled trees at logging operations throughout the State.

Annual removals of growing stock for 1981 totaled nearly 1.4 billion cubic feet. Softwood removals accounted for 1.1 billion cubic feet, or 79 percent of the total. Softwood removals currently equal 91 percent of softwood net growth, compared with 68 percent in 1971. Softwood removals have increased by 39 percent since 1971. Hardwood removals have increased by 20 percent and currently equal 50 percent of hardwood net growth. By ownership, 64 percent of all removals was from NIPF land, 30 percent from timberland controlled by forest industry, and 6 percent from public forests. Annual removals of growing stock included 5.1 billion board feet of sawtimber.

Southeast Georgia continues to account for the largest share of softwood removals—38 percent. Annual softwood removals increased by over 100 million cubic feet between 1971 and 1981 in this region. However, some of the softwood timber-drain pressure has shifted to the Piedmont regions. Fifty percent of the total increase in removals of softwood growing stock occurred in Central and North Central Georgia. About 95 percent of the increase in hardwood removals also occurred in these two Survey Units. Removals

of hardwood growing stock declined by 2 percent in Southeast Georgia and by 32 percent in North Georgia.

Timber products accounted for nearly 1.1 billion cubic feet, or 80 percent of the total removals from growing stock in 1981. Over 141 million cubic feet, or 10 percent, were left in the woods as logging residues. Another 10 percent of the removals resulted from cultural practices, land clearing, or other actions where trees were removed from commercial forest but not used. In addition to the 1.1 billion cubic feet of growing stock removed for products, 55 million cubic feet of timber not included in the inventory of growing stock were removed for roundwood products. This source includes cull trees, salvable dead trees, trees less than 5.0 inches d.b.h., tops and limbs of growing-stock trees, and all material taken from nonforest land. The use of 135 million cubic feet of plant byproducts for products boosted timber products output in Georgia to nearly 1.3 billion cubic feet in 1981.

Pulpwood Is the Leading Product

Pulpwood was the leading timber product harvested from Georgia's forests, accounting for 48 percent of all roundwood product output in 1981. Nearly 547 million cubic feet of roundwood were cut for pulpwood in 1981 compared with 445 million cubic feet in 1971. In addition, sawmills and other wood-using plants provided pulpmills with 115 million cubic feet of wood in the form of plant byproducts. Plant byproducts currently make up over 17 percent of the total production of 662 million cubic feet, about the same proportion as in 1971. Softwoods made up 87 percent of the total pulpwood output in 1981. Softwood sawtimber material accounts for a major portion of the round softwood pulp furnish. The use of such material is apparently increasing. In 1971 about 47 percent of the total softwood output of round pulpwood came from the saw-log portion of sawtimber trees. By 1981, this proportion had increased to 57 percent. In the short run, sawtimber material will likely continue to account for a large share of softwood pulpwood output in Georgia in view of recent softwood volume trends by diameter class.

Total pulpwood production continued its upward climb between 1971 and 1981 but not at the same pace or with the consistency as in the 1960's. Annual production rose from the equivalent of 7,260,000 cords in 1971 to 8,870,000 cords in 1981, a 22-percent increase (fig. 9). Depressed economic conditions in 1975 and in the latter portion of the remeasurement period resulted in reduced production for those periods. The expansion of existing pulping facilities and the addition of two mills between 1971 and 1981 boosted the daily pulping capacity in Georgia from 13,888 to 17,341 tons. A total of 17 mills operated in the State in 1981. Pulpmills outside Georgia drew away 22 percent of

¹U.S. Department of Commerce, Bureau of the Census. County business patterns, 1979, Georgia. CBP-79-12. Washington, DC: 1981. 174 p.

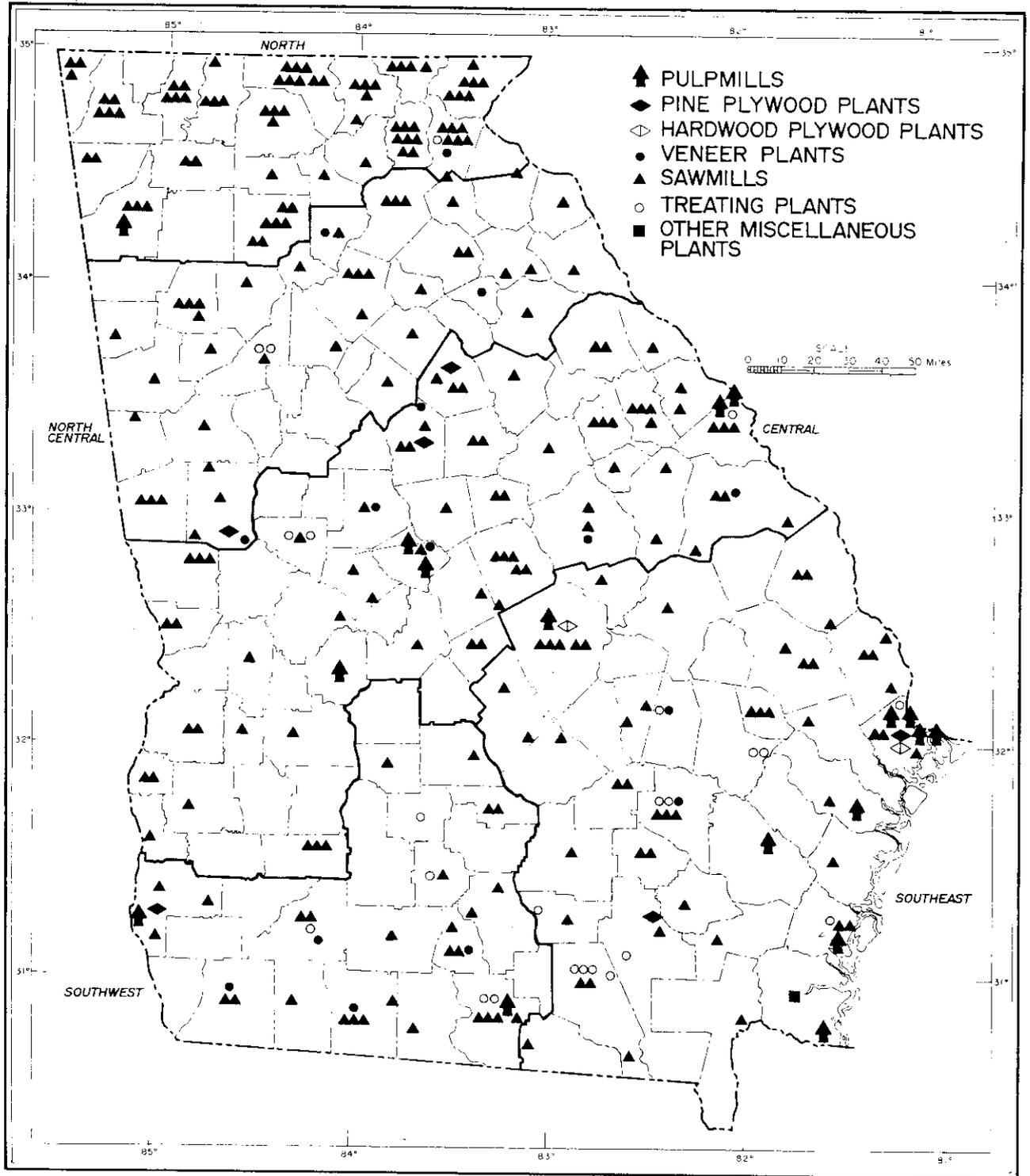


Figure 8. — Location of primary wood-using industries in Georgia, 1980.

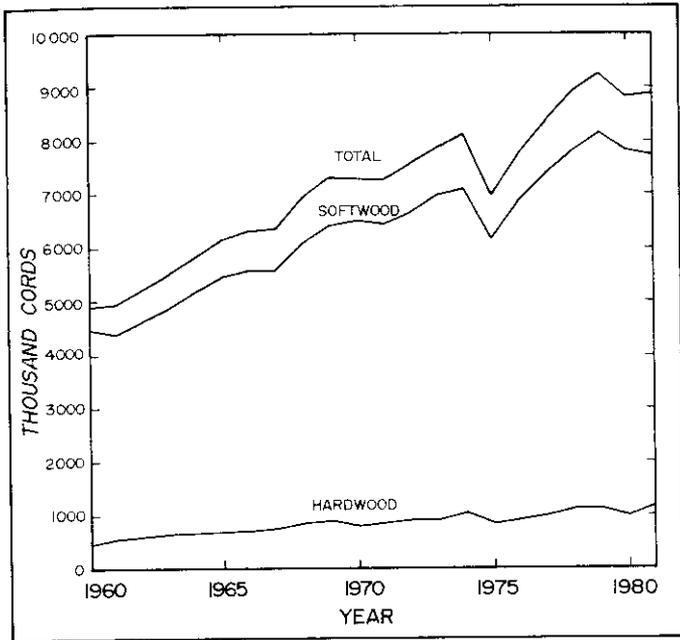


Figure 9. — Pulpwood production in Georgia, 1960 to 1981.

the round pulpwood produced in the State. Yet, Georgia remains a net importer of round pulpwood with imports exceeding exports by 29 percent. Alabama, Florida, and South Carolina timberlands are the major sources of imported pulpwood.

Round pulpwood production decreased by 7 percent between 1971 and 1981 in Southeast Georgia. This region still contributes 37 percent of the round pulpwood produced in the State. Nine of the 17 pulpmills are located here; these mills have apparently expanded their wood procurement activities in other regions of Georgia as well as in adjacent States. Round pulpwood production increased significantly in each of the other Survey Units in Georgia.

The increased use of chipping installations has made separate identification between roundwood chips and byproduct chips increasingly difficult. While the total 1981 pulpwood production figures in this report agree with the Georgia production in Resource Bulletin SE-66, "Southern Pulpwood Production, 1981," differences are acknowledged in the breakdown between roundwood and byproducts. Results from recent industry canvasses provided a higher but more accurate measure of roundwood chipped and are used in this report.

Large Increase in Saw-Log Production

Georgia's softwood lumber industry has rebounded from a low point in the early 1960's. Softwood lumber production dipped to the lowest levels of recent decades during those

years, but recent statistics show a significant recovery. Periodic surveys of lumber production for Georgia sawmills conducted by the Georgia Forestry Commission indicate that softwood lumber production increased by 94 percent between 1970 and 1980 (fig. 10)² and now approaches levels last reached in the early 1950's. Most of the increase in softwood production occurred after the recession period in the mid-1970's. The statistics in figure 10 do not show a drop in production during the recession because the industry canvasses were conducted prior to and after the primary recession year of 1975. Hardwood lumber production increased by 27 percent between 1970 and 1980.

Many small sawmills disappeared from Georgia during the past decade. A number of efficient and large-capacity mills have replaced them. For instance, between 1970 and early 1981 the number of mills producing less than 10 million board feet per year declined from 268 to 191, whereas mills producing more than 10 million board feet annually increased from 28 to 57 (see footnote 2). These large sawmills accounted for 79 percent of the lumber output in 1980 compared with 43 percent in 1970. Chipping canners were reported at 38 sawmills.

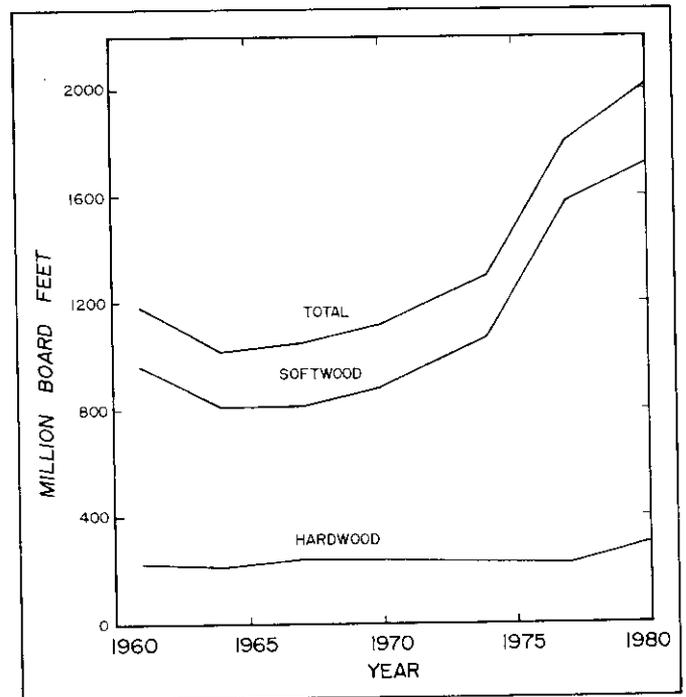


Figure 10. — Lumber production in Georgia, 1961 to 1980.

²Georgia Forestry Commission. 1981 Wood-using industries in Georgia: a utilization report and directory. 1981. 97 p.

Output of saw logs in Georgia increased proportionate to lumber production—from 299 million cubic feet in 1971 to 494 million cubic feet in 1981. Saw logs currently account for a considerably larger share of timber removals than in 1971. In 1971, saw logs made up 32 percent of total production, 36 percent of roundwood production, and 38 percent of removals from growing stock. By 1981, these proportions had increased to 38 percent of total production, 43 percent of roundwood, and 44 percent of removals from growing stock. Both softwood and hardwood saw-log production increased substantially since 1971—softwoods by 71 percent and hardwoods by 42 percent. Softwoods made up 83 percent of the most recent saw-log output.

Total output of saw logs included 1.5 million cubic feet of plant byproducts and 7.6 million cubic feet of logs from non-growing-stock sources. However, over 98 percent of the round saw-log output came from growing stock. About 96 percent of the output came from growing-stock trees of sawtimber size.

Georgia sawmills are net importers of saw logs with imports exceeding exports by some 46 percent. Saw-log import and export volumes, unlike those for pulpwood, are relatively small. Imports account for only 4 percent of roundwood mill receipts and exports account for only 3 percent of the round saw logs produced in the State. The overall interchange of wood included the adjacent States of Alabama, Florida, North Carolina, South Carolina, and Tennessee.

Comparison of the most recent saw-log production statistics with those for 1971 shows that softwood saw-log output increased in each of the five Survey Units in the State. Over 44 percent of the total volume increase took place in Central and North Central Georgia and 36 percent occurred in Southeast Georgia. Almost all the increase in number of high-capacity sawmills was also in these three regions. The increase in output of hardwood saw logs occurred primarily in Southeast, North Central, and Central Georgia.

Output of Pine Peeler Logs Up 62 Percent

The output of pine peeler logs increased from 27.1 to 44.0 million cubic feet, or by 62 percent. The pine plywood industry continued to expand during the 1970's with the opening of two new plants. Six pine plywood plants now operate in Georgia. Softwood veneer logs account for 77 percent of total veneer log output. Output of hardwood veneer logs continued to decline but at a slower pace than in previous years. The 1981 output of 12.9 million cubic feet is only 2 percent lower than the 1971 output.

In terms of quantity, peeler logs ranked third behind pulpwood and saw logs. Peeler logs accounted for 4 percent of total product output and for 5 percent of removals from

growing stock. About 95 percent of the peeler logs were retained in the State; volume of imports was almost three times greater than volume of exports. Over 87 percent of total wood receipts at Georgia plywood and veneer plants came from within the State.

Almost all the increased annual output of softwood peeler logs was in Central and North Central Georgia. Both new pine plywood plants were added in this area. Over three-fourths of the most recent output came from forests in these two regions.

Output of Other Industrial Products Down

Collectively, output of poles, pilings, posts, raw material for particleboard and other miscellaneous products declined from 38.5 to 31.2 million cubic feet between 1971 and 1981. Softwood posts and hardwood specialty products accounted for all the decline. Poles and pilings and particleboard output increased slightly. Altogether, products in this group accounted for 2 percent of total output, 1 percent of roundwood output, and 1 percent of removals from growing stock. Softwood species make up 98 percent of all other industrial products. Almost all the output of these products came from Southeast and Southwest Georgia.

Domestic Fuelwood Output Triples

The 1981 output data indicate that the established trend of declining fuelwood output in Georgia has reversed. In response to large price increases in conventional heating fuels and electricity, homeowners, industries, and public agencies alike are turning to wood to supplement or replace other sources of fuel. Output of roundwood for domestic fuel increased more than threefold from 1971 to 1981, going from 11.3 to 38.2 million cubic feet. Roundwood accounted for 97 percent of the total volume of 39.4 million cubic feet used for household fuel; plant byproducts such as slabs and edgings made up the remainder. Output of hardwood roundwood for domestic fuel use has increased by five times and accounts for 83 percent of the roundwood used for fuel. Excluding industrial fuel, fuelwood accounted for about 3 percent of the total roundwood output but accounted for 17 percent of the hardwood roundwood total. Almost 73 percent of the roundwood output for domestic fuel came from growing-stock trees.

Substantial volumes of wood were also used as industrial fuel. Georgia is a leader in this area. Wood-fired heating systems have been installed at numerous industrial plants, hospitals, schools, and other institutions throughout the State. The 1980 industry canvass revealed that 53.6 million cubic feet of plant byproducts were used for industrial fuel. This volume represents a sixfold increase since 1971. Additional volumes of bark were utilized as fuel.

Few Plant Residues Not Utilized

Primary wood-using plants in Georgia generated an estimated 211 million cubic feet of wood residues in 1981, excluding bark. About 71 percent of this material was converted to byproducts or sold for litter and mulch, and another 25 percent was used for industrial fuel. Only 4 percent of plant wood residues remained unused. Most of this material was sawdust and other fine residues. In comparison, primary manufacturing plants in 1971 generated an estimated 169 million cubic feet of residues; byproducts, litter and mulch accounted for 70 percent of the total, industrial fuel 5 percent, and unused 25 percent. These data suggest that any additional contribution to product output from byproducts will have to come from expansion rather than improved utilization of the raw material at the plants. In fact, only 4 percent of the increase in product output between 1971 and 1981 was attributed to plant byproducts.

In addition to wood residues, 93 million cubic feet of bark residues were generated. About 86 percent of this material was used for industrial fuel, and 6 percent for other miscellaneous uses, while 8 percent was not used.

More Complete Use of Timber Resource Needed

A comparison of the 1981 roundwood output with that of 1971 shows that utilization has improved. For instance, the proportion of growing-stock removals going into roundwood products has increased from 75 to 80 percent. However, further advances toward more complete utilization are possible and would serve to stretch present timber supplies.

One opportunity is to utilize increased volumes of non-growing-stock material whenever possible. Removals of this material for roundwood products did increase by 16 percent between 1971 and 1981, but removals from growing stock rose by 43 percent. In 1981, cull trees (primarily hardwoods), dead trees, tops, limbs, saplings, and material outside commercial forests provided only 55 million cubic feet, or less than 5 percent of roundwood output. Typical harvesting operations leave substantial volumes of wood standing, much of it of poor quality.

More complete use of growing-stock removals is also possible. Logging residues totaled 141 million cubic feet in 1981 and included the unused, merchantable portions of growing-stock trees cut or destroyed during timber harvesting. Although total logging residue volume is up, the proportion of total growing-stock removals attributed to logging residues has declined from over 11 percent in 1971 to 10 percent in 1981.

Improvement is also possible in the "other removals" category. Other removals totaled 133 million cubic feet and included growing-stock trees cut or destroyed in land clearing; trees girdled, poisoned, or removed in cultural activities; plus trees left standing but removed from commercial forest land because of a land use change. Such removals accounted for 10 percent of total removals from growing stock; many of the trees assigned to this category could be utilized.



Timber Supply Outlook

Timber supplies available over the next decade or longer have been determined by actions already taken, actions foregone, and past social and economic changes. Supplies will be modified somewhat by changes in mortality rates and possibly by further improvements in utilization. Primary concern here, therefore, is with long-term timber supplies, which can be determined by actions taken now to fully exploit the growth potential of land available for timber production. In this chapter, we look at factors that will influence future timber supplies and bracket 30-year estimates of these supplies under differing assumptions.

Area Harvested Exceeds Area Regenerated

Long-term supplies of timber will be determined by rates of regeneration at the beginning of a rotation and rates of harvesting at the end. A comparison of harvesting and regeneration rates between 1972 and 1982 for Georgia shows a deficiency in regeneration (tables IV, V). Across all broad management classes and ownerships, about one-half million acres annually underwent a final harvest between 1972 and 1982. Areas harvested and subsequently cleared to a nonforest-land use are excluded from this figure. In comparison, only 286,000 acres were adequately regenerated each year.

Pine stands made up about 63 percent of the annual harvest—about 312,000 acres. In contrast, only 188,000 acres were adequately regenerated to pine types each year. As pointed out previously, failure to regenerate harvested pine acres was the major cause of pine-type loss. About 80 percent of the total pine regeneration was due to planting. All the deficit in pine acres regenerated was found on NIPF and public land. On NIPF land, over 189,000 acres of pine stands were harvested annually, while only 66,000 acres were regenerated annually to pine stands. Regeneration totals include all types of stand establishment, on both forest and former nonforest land. More than 28 percent (19,000 acres) of the pine regeneration on NIPF land was attributed to natural reversion or tree planting on nonforest land. The harvest-regeneration comparison for pine is only slightly better on public forests. Here, about 12,000 acres of pine stands were harvested each year; area regenerated to pine equaled only half this amount.

Forest industry efforts to maintain and manage timberland under its control for pine production are evident. Nearly 111,000 acres of pine stands were harvested annually on industry land, and 116,000 acres a year were regenerated to pine. Nearly 97 percent of the pine regeneration on forest industry land resulted from planting. More than three-fifths of all acreage regenerated to pine was under forest industry control. Again, these statistics suggest that the proportion of

future pine timber supplies on forest industry land will be increasing.

Comparison with the period between 1961 and 1972 was not possible for any type of regeneration other than artificial. This comparison shows that the annual rate of planting has increased about 5 percent since the earlier period. Planting is up substantially on forest industry and public forests but down by some 35 percent on NIPF land. Most of the NIPF reduction resulted from a substantial drop in acreage of nonforest land planted and thus converted to forest.

Harvesting-regeneration relationships for oak-pine, upland hardwood, and lowland hardwood also leave considerable room for improvement. About 187,000 acres of these hardwood dominated stands were harvested annually during the

Table IV.--Area of commercial forest land treated or disturbed annually,^a by broad management, ownership, and past treatment or disturbance classes, Georgia, 1982

Broad management and ownership classes ^b	Major stand treatments			Natural disturbance
	Final harvest ^c	Commercial thinning	Other cutting	
----- Acres -----				
Pine plantation:				
Public	28	1,278	--	850
Forest industry	18,491	10,777	1,402	48,912
Other private	18,750	24,853	3,566	22,090
Total	37,269	36,908	4,968	71,852
Natural pine:				
Public	12,413	4,225	5,855	8,722
Forest industry	92,030	3,700	13,171	24,112
Other private	170,641	19,850	82,145	110,675
Total	275,084	27,775	101,171	143,509
Oak-pine:				
Public	3,989	--	2,208	4,390
Forest industry	18,752	339	2,764	7,337
Other private	50,266	2,017	25,421	38,259
Total	73,007	2,356	30,393	49,986
Upland hardwood:				
Public	2,054	--	2,138	10,047
Forest industry	19,812	--	2,655	5,902
Other private	49,128	1,208	35,015	41,503
Total	70,994	1,208	39,808	57,452
Lowland hardwood:				
Public	677	--	--	640
Forest industry	12,804	1,137	3,825	13,020
Other private	29,613	552	17,197	33,623
Total	43,094	1,689	21,022	47,283
All classes:				
Public	19,161	5,503	10,201	24,649
Forest industry	161,889	15,953	23,817	99,283
Other private	318,398	48,480	163,344	246,150
Total	499,448	69,936	197,362	370,082

^aBased on rates of occurrence between 1972 and 1982.

^bBroad management class before treatment or disturbance.

^cOwnership class in 1982. Forest industry includes lands under long-term lease.

past remeasurement period, but only 98,000 acres were regenerated to these types. This deficit was found on all three major owner groups. There are two major reasons for the shortfall in hardwood regeneration. First, many of the hardwood stands harvested were essentially high-graded in that

many low-quality trees were left. These residual trees effectively prevent stand regeneration or inhibit growth of existing reproduction in the understory. Second, some portion of the harvested hardwood or oak-pine stands was converted to pine plantations.

Table V.--Area of commercial forest land regenerated annually,^a by broad management and ownership classes, by type of regeneration, Georgia, 1982

Broad management and ownership classes ^c	Total regeneration	Type of regeneration				
		Artificial regeneration after a harvest	Natural regeneration after a harvest	Other artificial regeneration on forest land	Artificial regeneration on nonforest land	Natural reversion on nonforest land
----- Acres -----						
Pine plantation:						
Public	4,547	3,861	--	686	--	--
Forest industry	112,006	87,094	--	22,673	2,239	--
Other private	33,921	24,102	--	3,877	5,942	--
Total	150,474	115,057	--	27,236	8,181	--
Natural pine:						
Public	1,752	--	1,498	--	--	254
Forest industry	3,724	--	3,446	--	--	278
Other private	32,204	--	19,341	--	--	12,863
Total	37,680	--	24,285	--	--	13,395
Oak-pine:						
Public	3,385	--	3,123	--	--	262
Forest industry	9,730	5,746	2,482	1,502	--	--
Other private	24,569	968	22,077	662	--	862
Total	37,684	6,714	27,682	2,164	--	1,124
Upland hardwood:						
Public	1,189	--	1,189	--	--	--
Forest industry	9,059	1,793	6,311	955	--	--
Other private	39,872	--	36,989	301	--	2,582
Total	50,120	1,793	44,489	1,256	--	2,582
Lowland hardwood:						
Public	--	--	--	--	--	--
Forest industry	1,005	280	725	--	--	--
Other private	9,473	--	6,975	--	--	2,498
Total	10,478	280	7,700	--	--	2,498
All classes:						
Public	10,873	3,861	5,810	686	--	516
Forest industry	135,524	94,913	12,964	25,130	2,239	278
Other private	140,039	25,070	85,382	4,840	5,942	18,805
Total	286,436	123,844	104,156	30,656	8,181	19,599

^aBased on rates of occurrence between 1972 and 1982.

^bBroad management class after regeneration.

^cOwnership class in 1982. Forest industry includes lands under long-term lease.

About 12 percent of the oak-pine and hardwood regeneration is on areas where pine was planted. In some cases survival of planted pines was poor; in others hardwood reproduction was simply more plentiful than that of pine. In either case, an oak-pine or hardwood forest type frequently resulted.

In addition to final harvests, intermediate cutting was evident on 267,000 acres annually. The total area from which substantial volumes of wood were removed yearly (excluding land clearing), therefore, was 767,000 acres. Commercial thinning occurred on 70,000 acres annually, mostly in pine stands. Other miscellaneous cutting occurred on over 197,000 acres yearly.

Fusiform rust and pine bark beetles are the major natural destructive agents in Georgia's forests. Some 370,000 acres were damaged annually by all natural destructive agents, including disease, insects, fire, weather, and animals.

Prospective Supply From Plantations

Pine plantations are expected to provide a rapidly increasing share of softwood timber supplies. Plantations have already begun to contribute to supplies, as evidenced by the data in table IV. Between 1972 and 1982, pine plantations accounted for 12 percent of the harvested pine acreage and for 15 percent of total removals of softwood growing stock. These proportions will increase substantially as current plantations grow older and are cut and pine supplies from natural pine stands dwindle.

Field crews determined the origin of each sample stand visited during the latest survey. Evidence of tree planting or direct seeding was observed on 3.9 million acres (table VI). Distribution of acres planted by Survey Unit suggests that over 50 percent of the prospective supplies from plantations will occur in Southeast Georgia. In this Unit, over 27 percent of all timber stands are plantations; 46 percent of all pine stands here have been artificially regenerated. Plantations in this Survey Unit will be the first to supply substantially larger quantities of wood than have been available from plantations in the past, based on the age distribution of these stands. Significant areas of plantations have been established in each of the past three decades in this region and still existed at the time of the latest survey. Another 29 percent of the planting has occurred in Central Georgia. Here, planting appears to have increased dramatically during the past decade. These recent plantings should help improve the softwood growth in this Unit in 10 to 15 years. About 16 percent of all stands in this region are plantations, more than half of which are 10 years old or younger. The remaining three Survey Units combined account for 20 percent of all existing plantations. The plantation proportion in these three

Survey Units ranges from 4 percent in North Georgia to 13 percent in Southwest Georgia. In North Central Georgia, plantations account for 8 percent of all stands; planting has also increased substantially in this Unit.

Most Young Pine Stands Are Planted

Stand-age profiles provide additional resolution to our empirical look at future timber supplies (fig. 11). In the illustration, commercial forest area is divided into pine forest types—stands dominated by pine or other softwood trees—and hardwood forest types—stands dominated by hardwood trees. These broad types are further divided into pine plantation or natural pine and oak-pine or hardwood. Stands poorly stocked (generally less than 60 percent) with suitable trees of roughly equal size are excluded from the age classes and are designated as lacking a manageable stand.

A comparison of the acreage in pine plantations (Appendix table 9) with the planted totals in table VI shows that a substantial number of stands (271,000 acres) have evidence of planting but are classed as an oak-pine or hardwood forest type. Pines will no doubt outpace hardwoods on some portion of these stands, but many will remain predominantly hardwood without further treatment.

The age profiles for pine forest reflect the impact of past land use changes—the reversion and planting of abandoned farmland—on Georgia's pine resource. Large acreages of pine stands are now between 21 and 40 years old because of these changes. Acreage of natural pine stands established has dropped rapidly in the past two decades as the wholesale farmland abandonment ceased. Concurrently, spurred by forest industry planting, pine plantation establishment has increased. The overall decline in acreage of young pine stands established and the changed composition of more recent stands from natural to plantation are responsible for recent declines in number of small-diameter pine trees.

Both the reduced number of small pine trees and the drop in acreage of young pine stands suggest that pine timber supplies in the next one to two decades are not likely to rise appreciably above current levels. Current rates of pine stand regeneration will not fully replace the older pine stands once they are harvested. To use a hypothetical case, suppose that 3.2 million acres of pine stands are harvested in the next 10 years—the rate of pine stand harvest in the past 10 years. To supply this acreage would require the harvest of all pine stands greater than 40 years old plus two-thirds of the stands 31 to 40 years old. In reality, future harvests will not take all older stands first, but will include many of the stands currently in the 21 to 30 and younger age classes. But if pine regeneration after harvest continues at past rates, the acreage of pine stands will shrink further.

The fact that pine plantations accumulate higher volumes per acre than comparable natural pine stands should help

Table VI.--Area of commercial forest land, by Survey Unit, stand origin, and stand-age class, Georgia, 1982

Survey Unit and stand origin ^a	All classes	Stand-age class (years)						
		0-10	11-20	21-30	31-40	41-50	51-60	61+
----- Thousand acres -----								
Southeast:								
Planted	1,952.5	770.9	741.9	423.4	10.0	2.7	3.6	--
Natural	5,212.4	457.4	652.4	1,045.6	1,185.5	850.1	493.2	528.2
Total	7,164.9	1,228.3	1,394.3	1,469.0	1,195.5	852.8	496.8	528.2
Southwest:								
Planted	351.5	91.9	110.7	127.5	21.4	--	--	--
Natural	2,284.8	208.7	271.3	491.1	448.1	400.6	278.9	186.1
Total	2,636.3	300.6	382.0	618.6	469.5	400.6	278.9	186.1
Central:								
Planted	1,135.3	594.0	242.0	290.6	8.7	--	--	--
Natural	5,885.4	692.0	884.0	1,106.4	1,440.5	938.3	458.7	365.5
Total	7,020.7	1,286.0	1,126.0	1,397.0	1,449.2	938.3	458.7	365.5
North Central:								
Planted	295.3	156.3	62.8	58.9	13.6	--	3.7	--
Natural	3,519.7	552.8	415.2	578.6	945.0	556.1	302.8	169.2
Total	3,815.0	709.1	478.0	637.5	958.6	556.1	306.5	169.2
North:								
Planted	128.1	55.8	44.2	25.1	3.0	--	--	--
Natural	2,968.7	226.4	305.2	489.3	596.4	448.6	373.7	529.1
Total	3,096.8	282.2	349.4	514.4	599.4	448.6	373.7	529.1
State:								
Planted	3,862.7	1,668.9	1,201.6	925.5	56.7	2.7	7.3	--
Natural	19,871.0	2,137.3	2,528.1	3,711.0	4,615.5	3,193.7	1,907.3	1,778.1
Total	23,733.7	3,806.2	3,729.7	4,636.5	4,672.2	3,196.4	1,914.6	1,778.1

^aPlanted acreage includes all stands in which evidence of planting or direct seeding exists.

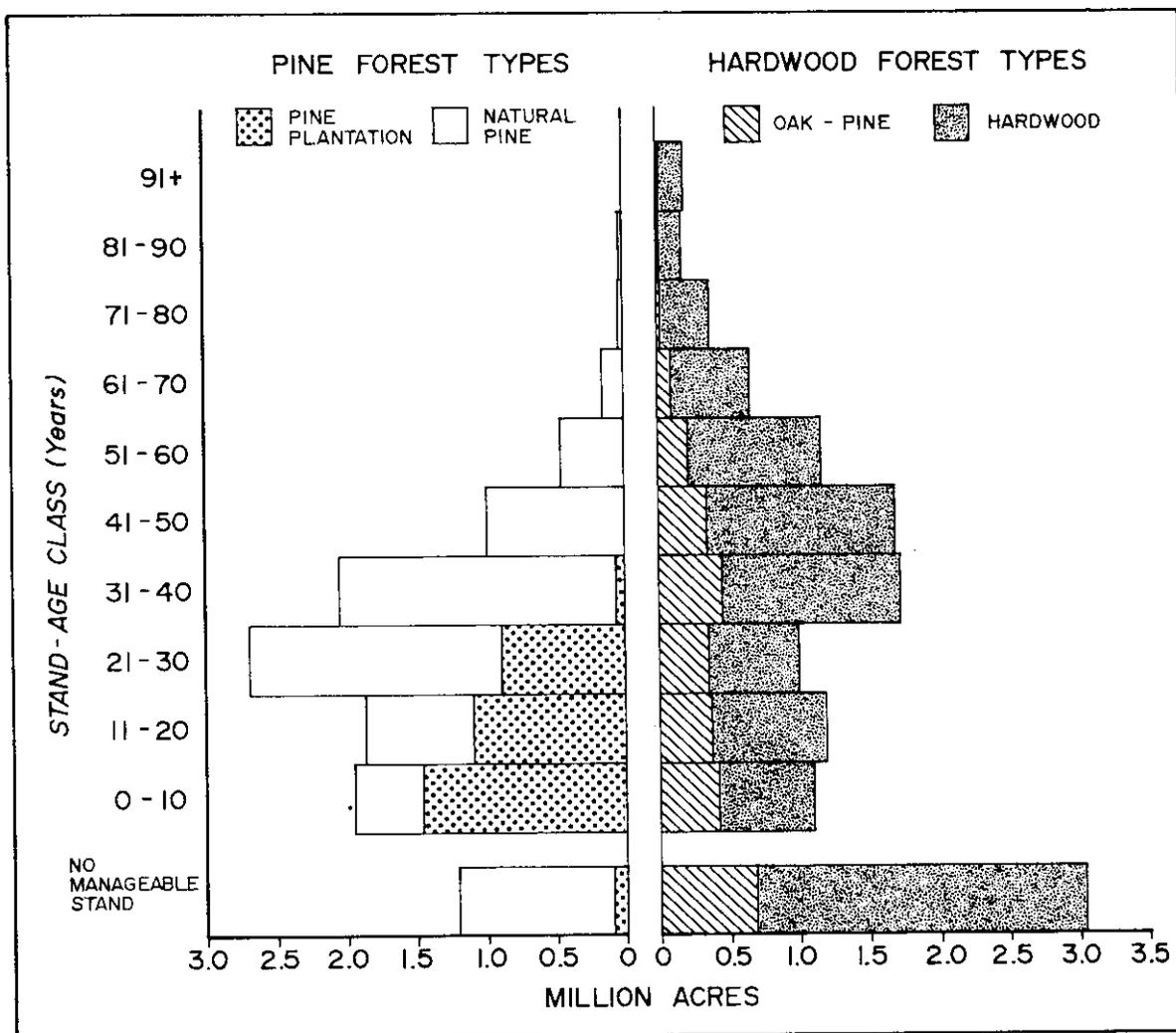


Figure 11.—Profile of area of commercial forest land, by stand-age and broad management classes, Georgia, 1982.

compensate for fewer available acres of older natural stands. Higher volumes per acre are also removed from harvested pine plantations because of more uniform species composition and tree size. But over two-thirds of all pine plantations are under forest industry control; NIPF owners control only 30 percent. Further, only 22 percent of the recently established plantations are on NIPF land. Pine stands on this ownership are typically natural and over 20 years of age. Relatively few of these stands are being regenerated to pine after harvest, so reduced pine timber supplies on NIPF land must be anticipated in the coming decade and beyond. It is important to remember that timber from NIPF lands represents the bulk of the free-market supply in Georgia. Forest industry pine stands, on the other hand, are typically planted and 20 years old or less. Increasing pine acreage is recorded in consecutively younger age classes. This age structure should

further enhance pine timber supplies on industry land.

Public forests supplied about 5 percent of the 1981 softwood removals. Little increase in volume of wood supplied from these forests can be expected given the diversity of management objectives considered by public agencies.

About 1.2 million acres of pine forests are so sparsely stocked that a manageable stand does not exist. These stands contain an average of only 405 cubic feet of growing stock per acre. Timber cutting between 1972 and 1982 contributed to current conditions in 55 percent of these stands; still others were cut prior to 1972.

More Balance in Hardwood Age Structure

In comparison to pine forests, hardwood forest types exhibit more uniformity across the range of ages. An accumulation of stands 31 to 50 years old does exist. Oak-pine

stands make up 24 percent of all hardwood acreage in the profile. These mixed pine-hardwood stands are more prevalent in the younger age classes, ranging from 39 percent of the hardwood stands 0 to 10 years old to only 6 percent of the hardwood stands 91 years of age and older. Timber cutting in pine stands tends to produce new oak-pine stands in the youngest age classes. Natural succession and timber cutting in the older stands tend to divert many of these acres to a pure hardwood type.

Future hardwood growth may slow once the hardwood stands between 30 and 50 years of age mature another 10 to 20 years or are cut. Recent hardwood volume increases in the smaller diameter classes are much smaller than in the previous inventory, and the number of hardwood saplings dropped. Despite these possible trends in hardwood growth, hardwoods have been and continue to be an underutilized resource. Large growth surpluses exist for hardwood growing stock; in addition, most of the substantial volumes of non-growing-stock material remain unused. Solely from the resource standpoint, hardwoods offer the most promising opportunity for significantly increasing timber cut over the next several years.

If all stands classified as oak-pine or hardwood were moderately to fully stocked, the gap between growth and removals would certainly widen. However, 1 out of 4 acres of hardwoods was inadequately stocked with trees meeting minimum requirements for growing stock (i.e., no manageable stand). Volume of growing stock averaged 418 cubic feet per acre in these stands. Timber was cut from about 54 percent of this acreage during the latest remeasurement period. Many were pine stands prior to harvest. Some unknown portion of these recently harvested areas will be planted with pine, but conditions on the majority are not likely to improve significantly without some intervention.

Timber Supply Projections

In this section we provide objective estimates of future timber supplies bracketed between a **prospective** available cut (the amount available if past trends, with modifications, are extrapolated for 30 years) and a **potential** available cut (a level that more nearly reflects the inherent growth potential of Georgia's forests). Net annual growth provides a maximum estimate of annual cut that can be sustained without depleting the inventory. Softwoods and hardwoods are projected separately using the Timber Resource Analysis System (TRAS) computer model. The results should not be interpreted as bold forecasts; they are reasonable estimates of timber supplies if the stated assumptions hold true.

Prospective. Several basic assumptions as to probable change over the next 30 years were made in this projection. First, area of timberland is assumed to continue to drop, but

at a lower rate than during the past two decades. At the end of the 30-year projection period, area of commercial timberland is assumed to be 22.0 million acres, a drop of 1.7 million acres.

Second, forestry progress will continue at the rate indicated by past trends. However, it is assumed that the number of 2-inch softwood trees will stabilize at present levels. Softwood mortality rates more consistent with the long-term average are utilized rather than the unusually high rate encountered during the latest remeasurement. Finally, level of available cut are not allowed to exceed net growth; timber removals equal net growth at the end of the projection. Cutting rates determined in the latest inventory are used to distribute the removals by diameter class.

With this set of assumptions, net growth per acre increases from 74 to 76 cubic feet by year 2011. When the acreage reduction is considered, prospective annual cut increases from 1,368 to 1,673 million cubic feet. Hardwoods account for over 92 percent of the prospective increase in available cut of growing stock (fig. 12). Softwood cut remains above 1981 levels throughout the projection period but is declining slightly in the latter portion due to reduced softwood net growth. By the end of the period, softwood growth is 7 percent lower than 1981 levels while softwood removals have risen by 2 percent. The current gap between hardwood growth and removals allows for large increases in prospective hardwood cut. These projections are not inconsistent with those implied in the age profiles for pine forests. The predicted softwood growth reduction is most probable on NIPF and public land where harvest-regeneration relationships for pine are out of balance. Recent reductions in number of small-diameter softwoods continue to work upward into larger diameter classes, while the number of 2-inch softwoods is held constant. At the end of 30 years, the number of softwoods in the 4-, 6-, 8-, and 10-inch diameter classes are below 1982 inventory levels.

Potential. A second set of projections estimated the potential timber supplies attainable over the same 30-year period through improved timber management. A more regulated forest resource should result from this management. In these projections, potential growth increased from 74 to 89 cubic feet per acre. This rate more nearly reflects the inherent growth potential of Georgia's timberland. For instance, a more simplistic method of estimating potential growth would be to weight the acreage of commercial forest land by site class. This calculation yields an estimate of 85 cubic feet per acre annually and assumes that sites are accurately classified based on their growth capacity when fully stocked with natural stands.

In the projection of potential supplies, management goals were expressed in terms of a stand-structure quotient for

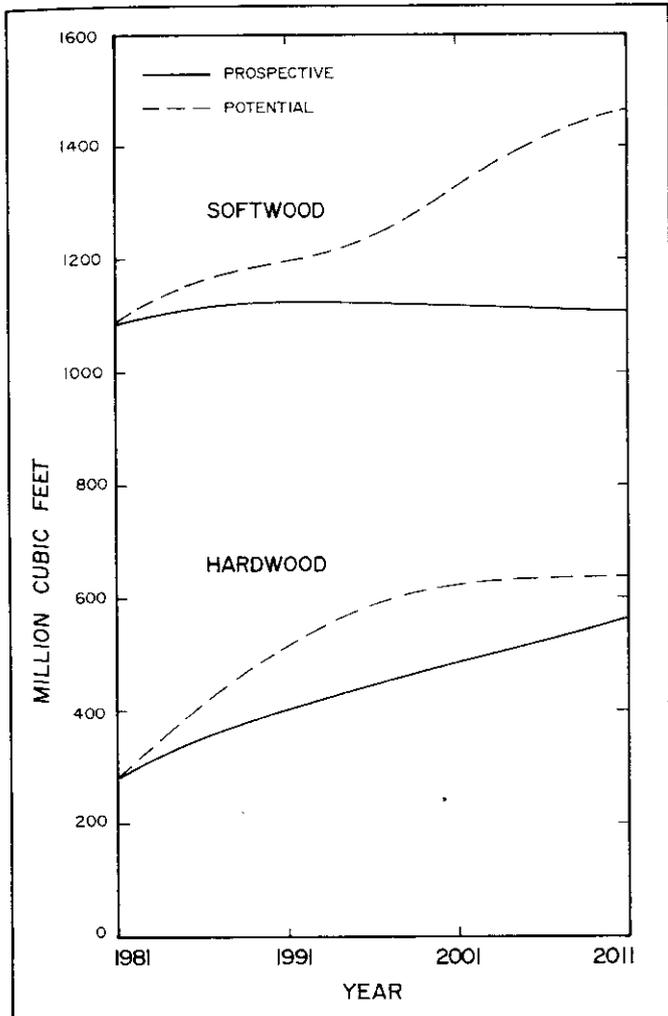
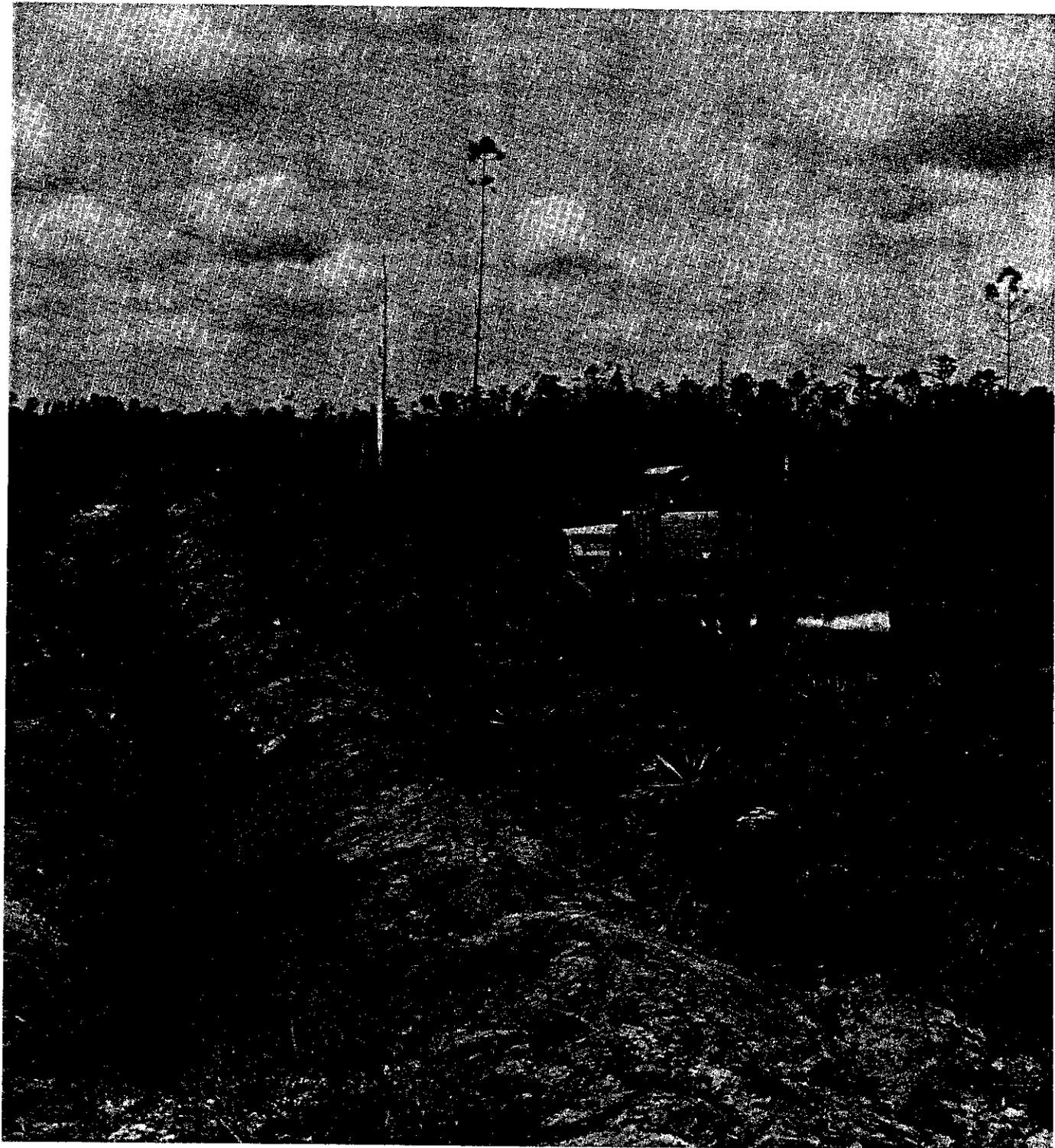


Figure 12.—Prospective and potential available cut, Georgia, 1981 to 2011.

both softwoods and hardwoods. The stand-structure quotient is determined by dividing the number of trees in any 2-inch diameter class by the number in the next larger class. In even-aged management, this quotient reflects the age distribution of the stands. Quotients were set at 1.80 for softwoods and 1.70 for hardwoods. The quotients call for more 2-, 4-, and 6-inch softwoods than currently exist and for fewer hardwoods in these diameter classes. In effect, more acreage would be put into pine production and less allowed to drift into young hardwood stands. Mortality rates for both softwoods and hardwoods were reduced by 50 percent during the projection. Finally and importantly, the area of commercial forest land was held at the 1982 acreage throughout the period.

Potential annual cut rises to 2,103 million cubic feet by the year 2011, an increase of 26 percent over prospective annual cut and 54 percent greater than the 1981 estimate of annual removals. Softwoods account for over 82 percent of the increase in potential available cut over that available in the prospective projection since pines were favored in the management assumptions. Further gains would have to be accomplished through some combination of site improvement, fertilization, genetic improvement, or acreage expansion.



Management Opportunities

Given the recent and prospective increases in demand for roundwood timber in the South, it becomes increasingly important to maintain timber growth at levels in line with the potential of the forests. Diminishing acreage, environmental concerns, a wide diversity of owner attitudes, and the high cost of intensive forestry practices all complicate possible actions to this end. However, the identification of needed stand treatments is a necessary first step in improving timber growth. Treatment opportunities discussed in this Chapter are based on stand conditions encountered at each sample stand; treatments which would result in significant increases in prospective growth are assigned to each plot. Stand conditions and thus treatment opportunities vary widely by broad ownership and broad management classes (table VII).

Adverse Sites Limit Opportunities on 1.5 Million Acres

Adverse sites limit the opportunity for management on 1.5 million acres, or 6 percent of Georgia's commercial forest land. These acres include wet areas with year-round abundance of water and areas with slopes of 40 percent or steeper. Steep slopes account for about 56 percent of the acreage classified as adverse. Most of the stands on steep slopes are in mountainous North Georgia, while areas with water problems are concentrated in the southern half of the State. About 89 percent of the adverse sites was classified as hardwood or oak-pine. By ownership class, the proportion of adverse sites ranged from 26 percent on public forests to less than 5 percent on NIPF land.

During the past 10 years timber cutting occurred on less than 11 percent of the stands on adverse sites. Timber growth was more than triple removals. Volume of growing stock per acre averaged 1,720 cubic feet per acre, 42 percent more than on nonadverse sites. Forest biomass totaled 103 green tons per acre. Based on past management rates and practicality, adverse sites are excluded from the management opportunities in table VII. However, these stands do offer opportunities for less intensive management.

Almost 13.1 Million Acres Support Stands in Good Condition

About 13.1 million acres, or 55 percent of the commercial forest land, supported stands in relatively good condition and on land suitable for intensive management. Generally, these stands were 60 percent or better stocked with immature trees of acceptable quality and free from significant damage or competition. Pine stands occupied over 58 percent of the acres meeting these standards. Volume of growing stock averaged 1,291 cubic feet per acre, while forest biomass averaged 70 green tons. Protection and prompt re-

generation of acreage harvested should sustain a high rate of timber growth on these lands.

By ownership class, 65 percent of the stands owned or leased by forest industry and suitable for intensive timber management were in good condition, compared with 56 percent on public land and 57 percent on NIPF land. The high rate on industry land is due to the high proportion of its holdings in pine plantations; 81 percent of all pine plantations were in good condition. For the other broad management classes, the proportion of the timberland suitable for intensive management and in relatively good condition ranged from 50 percent for lowland hardwood stands to 63 percent for natural pine stands.

Opportunities on 9.2 Million Acres

Sustainable increases in stand growth and future timber supplies from Georgia's forests are dependent on improving existing conditions on 9.2 million acres, or 39 percent of the State's timberland. Without treatment, these acres will grow far less timber than is possible. Six management opportunities are identified:

- 1. Salvage and regenerate seriously damaged stands on 249,000 acres.** These acres supported stands with merchantable timber seriously damaged by various agents. Diseases (primarily fusiform rust), insects, and weather were the major damaging agents in these stands. Stands needing salvage averaged 35 years of age and contained 1,704 cubic feet of growing stock and 87 green tons of forest biomass per acre. Further mortality and growth loss will occur unless these stands are liquidated and regenerated to suitable species. A concentration of salvage opportunity in pine plantations and natural pine stands reflects the high incidence of fusiform rust in these stands.

- 2. Harvest and regenerate mature stands on 1.1 million acres.** These acres supported old, high-risk stands with low growth and high mortality. Average age was 71 years. Volume per acre averaged 2,683 cubic feet of growing stock including over 11,000 board feet of sawtimber; forest biomass totaled 140 tons per acre. Lowland hardwood stands accounted for 36 percent of the harvest opportunity, pine stands 31 percent, upland hardwoods 24 percent, and oak-pine stands 9 percent. Over 70 percent of the harvest opportunity occurred on NIPF land.

- 3. Thin young, immature stands densely stocked with merchantable trees on over 1.1 million acres.** These acres supported immature stands (average age 29 years) so heavily stocked that trees were receiving considerable competition from each other. Some of the future growth potential

Table VII.--Area of idle cropland and commercial forest land, by broad management, ownership, and treatment opportunity classes, Georgia, 1982

Broad management and ownership classes ^a	Total area	Broad treatment opportunity class							Stands in relatively good condition	Adverse sites or conditions ^c
		Salvage	Harvest	Commercial thinning	Other stand improvement	Stand conversion ^b	Regeneration			
----- Thousand acres -----										
Idle cropland:										
Public	--	--	--	--	--	--	--	--	--	--
Forest industry	--	--	--	--	--	--	--	--	--	--
Other private	629.9	--	--	--	--	--	--	629.9	--	--
Total	629.9	--	--	--	--	--	--	629.9	--	--
Nonstocked forest:										
Public	36.4	--	--	--	--	--	--	36.4	--	--
Forest industry	186.8	--	--	--	--	--	--	186.8	--	--
Other private	470.3	--	--	--	--	--	--	454.5	--	15.8
Total	693.5	--	--	--	--	--	--	677.7	--	15.8
Fine plantations:										
Public	79.7	4.2	--	0.6	3.6	5.1	2.4	63.8	--	--
Forest industry	2,419.0	62.1	3.5	237.8	95.0	2.2	29.7	1,978.7	--	10.0
Other private	1,084.3	33.7	3.0	126.0	26.6	5.9	45.1	844.0	--	--
Total	3,583.0	100.0	6.5	364.4	125.2	13.2	77.2	2,886.5	10.0	10.0
Natural pine stands:										
Public	591.5	8.5	59.9	46.2	42.3	1.9	72.5	300.2	60.0	60.0
Forest industry	1,197.2	22.5	23.4	101.1	116.8	--	138.0	766.9	28.5	28.5
Other private	5,861.6	49.4	257.3	549.1	535.8	29.3	709.7	3,685.7	45.3	45.3
Total	7,650.3	80.4	340.6	696.4	694.9	31.2	920.2	4,752.8	133.8	133.8
Oak-pine stands:										
Public	243.9	--	27.1	.1	27.6	2.8	28.2	96.5	61.6	61.6
Forest industry	460.5	2.5	14.7	6.8	59.4	7.5	89.8	257.6	22.2	22.2
Other private	2,217.2	14.3	59.6	7.7	400.9	54.0	505.5	1,083.1	92.1	92.1
Total	2,921.6	16.8	101.4	14.6	487.9	64.3	623.5	1,437.2	175.9	175.9
Upland hardwood stands:										
Public	509.1	--	23.3	--	32.7	2.0	45.8	147.9	257.4	257.4
Forest industry	717.0	2.8	33.2	2.4	118.6	22.8	167.3	322.9	47.0	47.0
Other private	4,221.6	22.7	206.2	23.8	541.0	120.8	921.8	2,091.9	293.4	293.4
Total	5,447.7	25.5	262.7	26.2	692.3	145.6	1,134.9	2,562.7	597.8	597.8
Lowland hardwood stands:										
Public	123.2	--	14.9	3.5	8.3	1.8	19.8	47.7	27.2	27.2
Forest industry	955.7	13.5	131.1	7.5	101.4	15.8	145.3	319.1	222.0	222.0
Other private	2,358.7	12.7	252.8	34.0	232.3	41.3	407.1	1,057.8	320.7	320.7
Total	3,437.6	26.2	398.8	45.0	342.0	58.9	572.2	1,424.6	569.9	569.9
All classes:										
Public	1,583.8	12.7	125.2	50.4	114.5	13.6	205.1	656.1	406.2	406.2
Forest industry	5,936.2	103.4	205.9	355.6	491.2	48.3	756.9	3,645.2	329.7	329.7
Other private	16,843.6	132.8	778.9	740.6	1,736.6	251.3	3,673.6	8,762.5	767.3	767.3
Total	24,363.6	248.9	1,110.0	1,146.6	2,342.3	313.2	4,635.6	13,063.8	1,503.2	1,503.2

^aForest industry includes lands under long-term lease.

^bAreas occupied with species unsuitable for the site from the standpoint of timber production.

^cAreas where management opportunities are severely limited because of steep slopes or poor drainage.

will likely be lost to suppression mortality. Stands in need of commercial thinning supported an average of 2,385 cubic feet of growing stock and nearly 121 tons of forest biomass per acre. Pine stands accounted for nearly 93 percent of the commercial thinning opportunity. By ownership, 65 percent of the opportunity was on NIPF land, 31 percent on forest industry and only 4 percent on public land.

4. Remove undesirable trees and competing vegetation from other immature stands on 2.3 million acres. These acres supported immature stands (average age 19 years) receiving serious competition from rough trees and other inhibiting vegetation. Some type of cleaning and release would improve the growth of these stands. Growing-stock volume per acre averaged 908 cubic feet, while forest biomass averaged 64 green tons. Oak-pine and hardwood stands accounted for 65 percent of this opportunity. About 74 percent of the acres needing stand improvement occurred on NIPF land, 21 percent on forest industry, and 5 percent on public forests. Much of this treatment opportunity resulted from partial timber cuttings in which the scattered residual trees hinder the growth of subsequent reproduction.

5. Convert stands with species obviously unsuitable for the site from the standpoint of timber production to a more productive species on 313,000 acres. These acres supported a manageable stand (average age 24 years) but will produce far below their potential unless converted to species more suitable to the sites. Such stands averaged only 638 cubic feet of growing stock and 43 tons of forest biomass per acre. Almost 86 percent of the stands in need of conversion were dominated by hardwood stocking. Many of these hardwood stands resulted from the harvest of pines with subsequent replacement with poor-quality hardwoods. A number of pine stands were included in this opportunity, primarily when the existing species has been highly susceptible to a disease. NIPF land accounted for 80 percent of the stand conversion opportunity, forest industry about 16 percent, and public land the remaining 4 percent.

6. Regenerate over 4.0 million acres so poorly stocked with acceptable trees that manageable stands did not exist. As stated previously, over one-half of these stands had been cut in the past 10 years without subsequent regeneration and others were dominated by scrub oaks, brush, and damaged or poor-quality trees—usually remnants of former stands. Conditions were unlikely to change on most of these acres in the absence of regeneration activities. Since volume

of growing stock averaged 406 cubic feet and forest biomass only 29 tons per acre, the economics of harvesting this material are not attractive. However, this backlog of needed regeneration must be brought into a productive status if supplies of desirable species are to be substantially increased. Although bringing these acres into full production would require tremendous investments, the potential gains in timber supplies should eventually return these dollars to the economy.

Almost 17 percent of the area of commercial forest needing regeneration was classified as nonstocked, 25 percent as a pine forest type, 16 percent as an oak-pine type, 28 percent as an upland hardwood type, and 14 percent as a lowland hardwood type. Pines would likely be the species chosen to regenerate much of the poorly stocked forest land since demand, stumpage price, and high growth rate all make them most attractive. On many sites, good-quality hardwood species are well suited and can be established through less intensive and less costly means such as natural seeding and coppice methods. In many cases, advance reproduction is already present, only needing to be released by removing the poor-quality overstory trees.

Another 630,000 acres of idle cropland were added to the regeneration opportunity in table VII. These acres represent the major opportunity to add to the commercial forestland base in Georgia. Altogether, regeneration opportunities exist on over 4.6 million acres. More than 79 percent of this opportunity occurs on NIPF land, 16 percent on forest industry, and less than 5 percent on public land.

Regenerate Acreage Harvested

The foregoing examination of existing stand conditions and treatment opportunities revealed that the least desirable conditions for timber production often originated after timber harvesting. The primary focus then in acting on opportunities for increasing timber supplies should be on the prompt regeneration of stands following a final harvest. So long as stands are harvested without regard for the establishment of a vigorous new stand, poorly stocked and poor-quality stands will abound. Species composition and stocking must be controlled soon after harvest to avoid valuable growth losses and more costly treatments years later.

Data in tables IV and V show that both pine and hardwood stands were harvested at rates substantially higher than total regeneration to these types. For hardwoods, the deficit occurred across the three major ownership groups. The major need in regenerating vigorous stands of hardwoods is to remove the poor-quality overstory hardwoods at

the time of harvest to allow the resulting stand to fully develop. For pine stands, the deficit was concentrated on NIPF land. Forest industry has regenerated more acreage to pine than it has harvested. Past efforts on the part of forest industry in Georgia to establish young pine stands are now resulting in increased pine growth — a prime example of the impact of adequate stand regeneration on future timber supplies. Deficiencies in establishment of young pine stands, and the resulting shrinkage of the pine acreage base, threaten the adequacy of future pine timber supplies on NIPF land.

Several sources of assistance, both financial and professional, are available to landowners to aid in timber manage-

ment. Since 1974, the Forestry Incentives Program has been available to share the cost of tree planting and forest management with owners of small holdings. Additional Federal cost-sharing is available for forestry practices under the Agricultural Conservation Program (ACP). The 1980 Reforestation Law and other tax laws affecting forestry also provide incentives for reforestation and management. Professional advice and services are available to NIPF owners through forestry consultants, the Georgia Forestry Commission, and the University of Georgia Cooperative Extension Service. Many wood-using companies also offer landowner technical assistance.



Appendix

Procedure

The procedure used in the fifth Statewide inventory and evaluation of Georgia's forest resources included these basic steps:

1. Initial estimates of forest and nonforest acreages were developed from the classification of 118,600 sample clusters systematically spaced on the latest aerial photographs available. Field crews checked a subsample of 11,503 of these 16-point clusters on the ground. A linear regression was fitted to the data to develop the relationship between the photo and ground classification of the subsample. This procedure provided a means for adjusting the initial acreage estimates for change in land use since date of photography and for photo misclassifications.

2. Estimates of timber volume and forest classifications were determined from measurements recorded at 7,084 ground sample locations systematically distributed within the commercial forest land. The plot design at each location was based on a cluster of 10 points. In most cases, variable plots, delineated with basal-area factor of 37.5 square feet per acre, were systematically spaced within a single forest condition at 5 of the 10 cluster points. Trees less than 5.0 inches d.b.h. were tallied on fixed-radius plots around the point centers.

3. Seedlings, shrubs, vines, grasses, forbs, and other lesser vegetation occurring within a 35-foot radius of selected point centers were identified and recorded at each forest sample location. Each distinctive zone of lesser vegetation was classified based on its height, density, and species composition. When merged with the tree tally, this information provided a vegetative profile of each forest condition sampled. Additional nontimber attributes measured or classified included land use, terrain features, soils, erosion, litter, water, snags, tree cavities, livestock grazing, and recreational use.

4. Equations developed from detailed measurements of standing trees in Georgia and throughout the Southeast were used to compute 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. Forest biomass estimates were made using equations developed by the Utilization of Southern Timber Research Work Unit of the Southeastern Forest Experiment Station in Athens, Georgia. In addition, felled trees were measured at 101 active cutting operations to provide utilization factors for the different timber products and species groups and to supplement the standing-tree volume study.

5. Growth, removals, and mortality were estimated from the remeasurement of 6,134 permanent sample plots established in the 1972 inventory. A 1980 survey of timber products output, conducted by the Georgia Forestry Commission, along with the annual pulpwood production study for the South, provided additional information for breakdowns of removals by product.

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

7. All field data were sent to Asheville for editing and were entered into disk and magnetic-tape storage for processing. Final estimates were based on statistical summaries of the detailed data.

Reliability of the Data

Statistical analysis of the data indicates a sampling error of ± 0.21 percent for the estimate of total commercial forest area, 1.05 percent for the total growing-stock volume, 1.06 percent for total growing-stock volume growth, and 2.54 percent for total growing-stock removals. As the totals are broken down by forest type, species, tree diameter, and other subdivisions, the sampling error increases. If homogeneity of variances is assumed, the order of this increase is suggested in the following tabulation showing the sampling errors in terms of one standard error, or two chances out of three.

Sampling errors for selected areas and volumes^a

Sampling error ^b (percent)	Commercial forest area	Volume of growing stock		
		Inventory	Net growth	Removals
	M acres	-- Million cubic feet --		
1	1,046.7	--	--	--
2	261.7	8,150.8	493.3	--
3	116.3	3,622.6	219.3	980.6
4	65.4	2,037.7	123.3	551.6
5	41.9	1,304.1	78.9	353.0
10	10.5	326.0	19.7	88.3
15	4.7	144.9	8.8	39.2
20	2.6	81.5	4.9	22.1
25	1.7	52.2	3.2	14.1

^aSampling error of volume or area totals in question may be computed with the following formula:

$$E = \frac{(SE) \sqrt{\text{specified volume or area}}}{\sqrt{(\text{Volume or area total in question})}}$$

where: E = Sampling error of the volume or area total in question.

SE = Specified sampling error in table.

^bBy random-sampling formula.

Definitions of Terms

All live trees. All trees 1.0 inch d.b.h. and larger which are not dead at the time of inventory.

All live tree volume. Volume (cubic feet) of solid wood above the ground line in all live trees 1.0 inch d.b.h. and larger. The volume in twigs and lateral limbs smaller than 0.5 inch in diameter at the point of occurrence on sapling-size trees is included, but is excluded on poletimber and sawtimber-size trees.

Allowable cut. The volume of timber that could be cut on commercial forest land during a given period under specified management plans aimed at sustained production of timber products.

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.

Biomass. The aboveground green weight of solid wood and bark in all live trees 1.0 inch d.b.h. and larger from the ground to the tip of the tree. All foliage is excluded. The weight of wood and bark in lateral limbs, secondary limbs, and twigs under 0.5 inch in diameter at the point of occurrence on sapling-size trees is included but is excluded on poletimber and sawtimber-size trees.

Bole. That portion of a tree between a 1-foot stump and a 4-inch top diameter outside bark (d.o.b.) in trees 5.0 inches d.b.h. and larger.

Broad management class. A classification of commercial forest land based on forest type and stand origin.

Pine plantation. Stands that have been artificially regenerated by planting or direct seeding and with a southern yellow pine, white pine-hemlock, or other softwood forest type.

Natural pine. Stands that have not been artificially regenerated and with a southern yellow pine, white pine-hemlock, or other softwood forest type.

Oak-pine. Stands with a forest type of oak-pine.

Upland hardwood. Stands with a forest type of oak-hickory, chestnut oak, southern scrub oak, or maple-beech-birch.

Lowland hardwood. Stands with a forest type of oak-gum-cypress, elm-ash-cottonwood, palm, or other tropical.

Bureau of Land Management land. Federal land administered by the Bureau of Land Management.

Census water. Streams, sloughs, estuaries, canals, and other moving bodies of water one-eighth of a statute mile in width and greater, and lakes, reservoirs, ponds, and other permanent bodies of water 40 acres in area and greater.

Commercial forest land. Land at least 16.7 percent stocked by forest trees of any size, or formerly having had such tree cover, not currently developed for nonforest use, capable producing 20 cubic feet of industrial wood per acre per year and not withdrawn from timber utilization by legislative action.

Commercial species. Tree species conventionally regarded as being able to develop into trees suitable for the manufacture of industrial timber products. Species that typically exhibit small size, poor form, or inferior quality are excluded.

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. All includes idle farmland.

D.b.h. Tree diameter (outside bark) at breast height (4.5 feet above the ground).

Diameter class. A classification of trees based on tree d.b.h. Two-inch diameter classes are commonly used by Forest Inventory and Analysis, with the even inch as the approximate midpoint for a class. For example, the 6-inch class includes trees 5.0 through 6.9 inches d.b.h., inclusive.

Farm. Land on which agricultural operations are being conducted and sale of agricultural products totaled \$1,000 or more during the year.

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

Farmer-owned land. (See other private land.)

Forest industry land. Land owned by companies or individuals operating wood-using plants.

Forest industry leased land. Land which is leased or under management contracts to forest industry from other owners for periods of one forest rotation or longer. Land under cutting contracts is not included.

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 on the species forming a plurality of live-tree stocking.

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

Spruce-fir. Forests in which spruce or true firs, singly or in combination, constitute a plurality of the stocking. (Common associates include maple, birch, and hemlock.)

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

Oak-pine. Forests in which hardwoods (usually upland oaks) constitute a plurality of the stocking but in which pines account for 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, constitute a plurality of the stocking, except where pines account for 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. Bottom-land forests in which tupelo, blackgum, sweetgum, oaks, or southern cypress, singly or in combination, constitute a plurality of the stocking, except where pines account for 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, constitute a plurality of the stocking. (Common associates include willow, sycamore, beech, and maple.)

Maple-beech-birch. Forests in which maple, beech, or yellow birch, singly or in combination, constitute a plurality of the stocking. (Common associates include hemlock, elm, basswood, and white pine.)

Palm, other tropical. Forests in which palms and other tropicals constitute a plurality of the stocking.

Gross growth. Annual increase in merchantable volume of trees in the absence of cutting and mortality. (Gross growth includes survivor growth, ingrowth, growth on ingrowth, growth on removals prior to removal, and growth on mortality prior to death.)

Growing-stock trees. Live sawtimber-size trees of commercial species containing at least a 12-foot log, or two noncontiguous saw logs each 8 feet or longer, meeting minimum grade requirements (hardwoods must qualify as either a log grade 3 or 4; softwoods must qualify as a log grade 3) with at least one-third of the gross board-foot volume (International 1/4-inch rule) between a 1-foot stump and the minimum saw-log top being sound, or a live tree below sawtimber size that will prospectively qualify under the above standards.

Desirable tree. A tree that qualifies as growing stock and has no serious defects in quality limiting present or prospective use; is of relatively high vigor (30 percent or more live crown ratio); is compatible with the site and physiographic class; has a total board-foot loss not to exceed 15 percent in softwoods or 25 percent in hardwoods as a result of severe sweep, crook, or lean; and has a relatively clear bole.

Acceptable tree. A tree that qualifies as growing stock but does not meet the minimum requirements to qualify as a desirable tree. Included are sawtimber-size trees that do not contain a 12-foot saw log, because of excessive natural taper in the butt log, but have the potential to produce a 12-foot saw log as diameter increases.

Growing-stock volume. Volume (cubic feet) of solid wood in growing-stock trees 5.0 inches d.b.h. and larger, from a 1-foot stump to a minimum 4.0-inch top diameter, outside bark, on the central stem. Volume of solid wood in primary forks from the point of occurrence to a minimum 4.0-inch top diameter outside bark is included.

Hardwoods. Angiosperms; dicotyledonous trees (including all palm species which are monocotyledonous), usually broadleaf and deciduous.

Soft hardwoods. Soft-textured hardwoods such as box-elder, red and silver maples, hackberry, loblolly-bay, sweetgum, yellow-poplar, magnolia, sweetbay, water tupelo, blackgum, sycamore, cottonwood, black cherry, willow, basswood, and elm.

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

Idle farmland. Land including former cropland, orchard, improved pasture, and farm sites not tended within the past 2 years, and currently less than 16.7 percent stocked with live trees.

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

Indian land. Tribal land held in fee by the Federal Government but administered for Indian Tribal groups by the Bureau of Indian Affairs.

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. 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 one-eighth of a statute mile in width, and lakes, reservoirs, and ponds less than 40 acres in area.

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

Logging residues. The unused merchantable portion of growing-stock trees cut or destroyed during logging operations.

Logging slash. The unmerchantable portion of growing-stock trees (including saplings) plus all cull trees 1.0 inch d.b.h. and larger cut or destroyed during logging operations and not used.

Manageable stand. Commercial forest land at least 60 percent stocked with growing-stock trees that can be featured together under a management scheme.

Merchantable portion. That portion of all live trees 5.0 inches d.b.h. and larger between a 1-foot stump and a minimum 4.0-inch top diameter outside bark on the central stem. That portion of primary forks from the point of occurrence to a minimum 4.0-inch top diameter outside bark is included.

Merchantable volume. Solid-wood volume in merchantable portion of all live trees.

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

Miscellaneous private land. (See other private land.)

Mortality. The merchantable volume in trees that have died from natural causes during a specified period.

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

Net annual growth. The net change in merchantable volume for a specific year in the absence of cutting (gross growth minus mortality for that specified year.)

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

Noncommercial forest land. Forest land not considered commercial. Includes both unproductive forest land and 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 land formerly forested where timber production is precluded by development for other uses.

Nonindustrial private forest (NIPF) land. (See other private land.)

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

Other private land. Privately owned land excluding forest industry land or forest industry leased land. Also referred to as nonindustrial private forest (NIPF) land.

Farmer-owned land. Owned by farm operators, excluding incorporated farm ownerships.

Other individual land. Owned by individuals other than farm operators.

Other corporate land. Owned by corporations, including incorporated farm ownerships.

Other removals. The growing-stock volume of 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.

Plant residues. Wood material generated in the production of timber products at primary manufacturing plants.

Coarse residues. Material, such as slabs, edgings, trim, veneer cores and ends, which is suitable for chipping.

Fine residues. Material, such as sawdust, shavings, and veneer chippings, which is not suitable for chipping.

Plant byproducts. Residues (coarse or fine) utilized in the further manufacture of industrial products or for consumer use, or utilized as fuel.

Unused plant residues. Residues (coarse or fine) that are not used for any product, including fuel.

Poletimber-size trees. All live trees at least 5.0 inches 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 volume by log or tree grades.

Rangeland. Land on which the natural vegetation is predominantly native grasses, grasslike plants, forbs, or shrubs valuable for forage, not qualifying as commercial forest and not developed for another land use. Rangeland includes natural grassland and savannah.

Rotten trees. Live trees of commercial species that do not contain at least one 12-foot saw log, or two noncontiguous saw logs, each 8 feet or longer, now or prospectively, primarily because of rot or missing sections, and with less than one-third of the gross board-foot tree volume in sound material.

Rough trees. Live trees of commercial species that do not contain at least one 12-foot saw log, or two noncontiguous saw logs, each 8 feet or longer, now or prospectively, primarily because of roughness, poor form, splits, and cracks, and with less than one-third of the gross board-foot tree volume in sound material; and all live trees of noncommercial species.

Roundwood (roundwood logs). Logs, bolts, or other round sections cut from trees for industrial or consumer uses.

Roundwood chipped. Any timber cut primarily for pulpwood, delivered to non-pulpmills, chipped, and then sold to pulpmills as residues, including chipped tops, jump sections, whole trees and pulpwood sticks.

Roundwood products. Any primary product such as lumber, poles, pilings, pulp, or fuelwood which is produced from roundwood.

Salvable dead trees. Standing or down dead trees considered utilizable by Forest Inventory and Analysis standards.

Saplings. Live trees 1.0 to 5.0 inches d.b.h.

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 a 1-foot stump and the saw-log top, including the portion of forks large enough to contain a saw log.

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

Sawtimber-size trees. Softwoods 9.0 inches d.b.h. and larger and hardwoods 11.0 inches d.b.h. and larger.

Sawtimber volume. Growing-stock volume in the saw-log portion of sawtimber-size trees in board feet (International 1/4-inch rule).

Seedlings. Live trees of commercial species less than 1.0 inch d.b.h. 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, by annual production capacity.

Class 1. 165 or more cubic feet per acre.

Class 2. 120 to 164 cubic feet per acre.

Class 3. 85 to 119 cubic feet per acre.

Class 4. 50 to 84 cubic feet per acre.

Class 5. 20 to 49 cubic feet per acre.

Softwoods. Gymnosperms; in the order Coniferales, usually evergreen (includes the genus *Taxodium* which is deciduous), having needles or scalelike leaves.

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

Other softwoods. Cypress, eastern redcedar, white cedar, eastern white pine, eastern hemlock, spruce, and fir.

Stand-size class. A classification of forest land based on the diameter class distribution of growing-stock trees in the stand.

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 total 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 total stocking is saplings and seedlings.

State, county, and municipal land. Land owned by States, counties, and local public agencies or municipalities, or land 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 with a minimum standard, depending on tree size, required to fully utilize the growth potential of the land.

Fully stocked. 100 percent or more stocking.

Medium stocked. 60 to 99 percent stocking.

Poorly stocked. Less than 60 percent stocking.

Survivor growth. The merchantable volume increment on trees 5.0 inches d.b.h. and larger in the inventory at the beginning of the year and surviving to its end.

Timber products. Roundwood products and byproducts.

Timber removals. The merchantable volume of trees removed from the inventory by harvesting, cultural operations such as stand improvement, land clearing, or changes in land use.

Top. The portion of the main stem and forks from a 4.0-inch diameter outside bark to the tips of the main stem and forks, plus all other limbs above the 4.0-inch top at least 0.5 inch in diameter at their point of occurrence.

Treatment opportunity. A classification of the management or treatment that would most improve for timber production the existing condition of the stand being sampled.

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 minimum top diameter 4.0 inches outside bark or to the point where the main stem or fork breaks into limbs.

Urban and other areas. 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.

Stocking standard

D.b.h. class	Minimum number of trees per acre for full stocking	Minimum basal area per acre for full stocking
Seedlings	600	--
2	560	--
4	460	--
6	340	67
8	240	84
10	155	85
12	115	90
14	90	96
16	72	101
18	60	106
20	51	111

Conversion Factors

Cubic feet of wood per average cord
(excluding bark)

D.b.h.	Pine	Other softwood	Hardwood
6	61.0	68.2	60.0
8	68.1	76.0	68.4
10	73.1	81.4	73.4
12	76.7	85.2	76.4
14	79.4	88.2	78.4
16	81.6	90.4	79.8
18	83.3	92.3	80.8
20	84.8	93.8	81.5
22	86.0	95.1	82.1
24+	87.7	97.8	83.1
Average	73.3	84.6	74.1

Rough cords per M cubic feet (without bark)=

$$a + b \left(\frac{1}{d.b.h.} \right) + c \left(\frac{1}{d.b.h.} \right)^2$$

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

Metric equivalents of units used in this report

1 acre = 4,046.86 square meters or 0.404686 hectares

1 cubic foot = 0.028317 cubic meters

1 inch = 2.54 centimeters or 0.0254 meters

Breast height = 1.4 meters above ground level

1 square foot = 929.03 square centimeters or 0.0929 square meters

1 square foot per acre basal area = 0.229568 square meters per hectare

1 pound = 0.454 kilograms

1 ton = 0.907 metric tons

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Table 1.--Area, by land class, Georgia, 1982

Land class	:	Area
		Acres
Forest land:		
Commercial	:	23,733,684
Productive-reserved	:	490,593
Unproductive	:	18,161
Total	:	24,242,438
Nonforest land:		
Cropland	:	6,773,563
Pasture and range	:	2,505,404
Othera	:	3,646,308
Total	:	12,925,275
All land^b	:	37,167,713

^aIncludes swampland, industrial, and urban areas, other nonforest land, and 331,250 acres classed as water by Forest Survey standards but defined by Bureau of Census as land.

^bFrom the U.S. Bureau of Census, 1970 and 1980.

Table 2.--Area of commercial forest land, by ownership class, Georgia, 1982

Ownership class	:	Area
		Acres
National Forest	:	764,895
Other Federal:		
Bureau of Land Management	:	--
Indian	:	--
Miscellaneous Federal	:	631,154
Total	:	631,154
State	:	117,704
County and municipal	:	70,009
Forest industry	:	4,963,738
Forest industry-leased	:	972,510
Other private:		
Farmer	:	6,041,488
Other individual	:	8,690,248
Other corporate	:	1,481,938
Total	:	16,213,674
All ownerships	:	23,733,684

Table 3.--Area of commercial forest land, by stand-size and ownership classes, Georgia, 1982

Stand-size class	:	All	National	Other	Forest	Forest	Other
		ownerships	Forest	public	industry	industry-leased	private
----- Acres -----							
Sawtimber	:	9,508,717	467,252	450,378	1,397,467	163,131	7,030,489
Poletimber	:	7,721,620	175,907	190,053	1,582,069	392,154	5,381,437
Sapling and seedling	:	5,809,798	110,649	153,116	1,817,448	397,108	3,331,477
Nonstocked	:	693,549	11,087	25,320	166,754	20,117	470,271
All classes	:	23,733,684	764,895	818,867	4,963,738	972,510	16,213,674

Table 4.--Area of commercial forest land, by stand-volume and ownership classes, Georgia, 1982

Stand volume per acre ^a	:	All	National	Other	Forest	Forest	Other
		ownerships	Forest	public	industry	industry-leased	private
----- Acres -----							
Less than 1,500 fbm	:	9,989,911	152,653	296,437	2,869,157	702,752	5,968,912
1,500 to 5,000 fbm	:	6,938,501	275,707	205,659	983,266	150,774	5,323,095
More than 5,000 fbm	:	6,805,272	336,535	316,771	1,111,315	118,984	4,921,667
All classes	:	23,733,684	764,895	818,867	4,963,738	972,510	16,213,674

^aInternational 1/4-inch rule.

Table 5.--Area of commercial forest land, by stocking classes of growing-stock trees and ownership class, Georgia, 1982

Stocking class	All ownerships	National Forest	Other public	Forest industry	Forest industry- leased	Other private
----- Acres -----						
Overstocked	1,015,481	31,056	49,032	281,753	39,345	614,295
Fully stocked	7,270,976	200,188	211,241	1,902,730	434,914	4,521,903
Moderately stocked	10,569,605	410,058	369,651	1,876,163	334,242	7,579,491
Poorly stocked	4,184,073	112,506	163,623	736,338	143,892	3,027,714
Nonstocked	693,549	11,087	25,320	166,754	20,117	470,271
All classes	23,733,684	764,895	818,867	4,963,738	972,510	16,213,674

Table 6.--Area of commercial forest land, by site and ownership classes, Georgia, 1982

Site class (ft ³ /acre)	All ownerships	National Forest	Other public	Forest industry	Forest industry- leased	Other private
----- Acres -----						
165 or more	85,708	11,610	2,649	8,350	--	63,099
120-164	971,341	65,099	59,692	170,497	28,278	647,775
85-119	7,398,436	215,140	320,786	1,390,122	258,538	5,213,850
50-84	13,895,937	404,982	395,104	3,074,336	634,596	9,386,919
20-49	1,382,262	68,064	40,636	320,433	51,098	902,031
All classes	23,733,684	764,895	818,867	4,963,738	972,510	16,213,674

Table 7.--Area of commercial forest land, by forest type and ownership class, Georgia, 1982

Forest type	All	National	Other	Forest	Forest	Other
	ownerships	Forest	public	industry	industry-	private
	Acres					
Softwood types:						
White pine-hemlock	81,429	66,782	--	--	--	14,647
Spruce-fir	--	--	--	--	--	--
Longleaf pine	676,444	--	46,747	75,073	8,147	546,477
Slash pine	4,057,766	4,106	137,764	1,457,863	336,246	2,121,787
Loblolly pine	5,130,233	67,660	221,303	1,334,134	248,554	3,258,582
Shortleaf pine	914,704	42,485	29,388	116,070	24,426	702,335
Virginia pine	380,955	28,242	7,449	23,588	--	321,676
Sand pine	21,335	--	--	11,022	--	10,313
Eastern redcedar	19,658	--	--	--	--	19,658
Pond pine	141,448	--	13,172	32,231	22,003	74,042
Spruce pine	--	--	--	--	--	--
Pitch pine	14,947	14,947	--	--	--	--
Table Mountain pine	--	--	--	--	--	--
Total	11,438,919	224,222	455,823	3,049,981	639,376	7,069,517
Hardwood types:						
Oak-pine	2,959,550	133,036	118,616	409,336	59,670	2,238,892
Oak-hickory	5,458,754	403,866	103,656	679,320	77,625	4,194,287
Chestnut oak	37,982	--	--	--	--	37,982
Southern scrub oak	308,521	--	19,506	36,883	3,609	248,523
Oak-gum-cypress	3,069,475	--	105,310	684,230	186,773	2,093,162
Elm-ash-cottonwood	460,483	3,771	15,956	103,988	5,457	331,311
Maple-beech-birch	--	--	--	--	--	--
Total	12,294,765	540,673	363,044	1,913,757	333,134	9,144,157
All types	23,733,684	764,895	818,867	4,963,738	972,510	16,213,674

Table 8.--Area of commercial forest land, by forest type and stand-size class, Georgia, 1982

Forest type	All classes	Stand-size class			Nonstocked areas
		Sawtimber	Poletimber	Sapling-seedling	
Acres					
Softwood types:					
White pine-hemlock	81,429	67,529	--	13,900	--
Spruce-fir	--	--	--	--	--
Longleaf pine	676,444	422,361	154,936	68,174	30,973
Slash pine	4,057,766	1,102,769	1,650,928	1,195,828	108,241
Loblolly pine	5,130,233	2,228,863	1,336,955	1,501,142	63,273
Shortleaf pine	914,704	415,137	358,823	140,744	--
Virginia pine	380,955	133,073	209,913	37,969	--
Sand pine	21,335	--	--	21,335	--
Redcedar	19,658	--	6,850	12,808	--
Pond pine	141,448	59,420	50,760	28,097	3,171
Spruce pine	--	--	--	--	--
Pitch pine	14,947	14,947	--	--	--
Table Mountain pine	--	--	--	--	--
Total	11,438,919	4,444,099	3,769,165	3,019,997	205,658
Hardwood types:					
Oak-pine	2,959,550	1,062,357	923,878	935,317	37,998
Oak-hickory	5,458,754	2,165,072	1,843,760	1,257,456	192,466
Chestnut oak	37,982	13,966	19,637	4,379	--
Southern scrub oak	308,521	11,306	53,304	78,817	165,094
Oak-gum-cypress	3,069,475	1,512,411	997,225	480,595	79,244
Elm-ash-cottonwood	460,483	299,506	114,651	33,237	13,089
Maple-beech-birch	--	--	--	--	--
Total	12,294,765	5,064,618	3,952,455	2,789,801	487,891
All types	23,733,684	9,508,717	7,721,620	5,809,798	693,549

Table 9.--Area of commercial forest land, by stand-age and broad management classes, all ownerships, Georgia, 1982

Stand-age class (years)	All classes	Broad management class				
		Pine plantation	Natural pine	Oak-pine	Upland hardwood	Lowland hardwood
----- Acres -----						
0-10	3,053,902	1,464,458	485,345	425,172	557,542	121,385
11-20	3,052,400	1,094,657	760,714	367,058	542,457	287,514
21-30	3,685,932	887,299	1,800,983	351,091	432,185	214,374
31-40	3,778,231	53,846	2,002,153	454,661	739,087	528,484
41-50	2,688,179	2,736	998,324	327,532	764,141	595,446
51-60	1,630,105	--	465,446	213,612	531,424	419,623
61-70	805,718	--	147,204	92,250	341,415	224,849
71-80	406,536	--	33,959	24,253	161,703	186,621
81+	382,536	--	25,936	24,460	142,333	189,807
No manageable stand	4,250,145	89,159	1,126,700	679,461	1,592,970	761,855
All classes	23,733,684	3,592,155	7,846,764	2,959,550	5,805,257	3,529,958

Table 10.--Area of commercial forest land, by stand-age and broad management classes, public ownerships, Georgia, 1982

Stand-age class (years)	All classes	Broad management class				
		Pine plantation	Natural pine	Oak-pine	Upland hardwood	Lowland hardwood
----- Acres -----						
0-10	157,792	45,551	40,127	42,828	24,994	4,292
11-20	100,317	12,496	37,771	23,403	17,069	9,578
21-30	132,198	16,258	53,364	20,717	28,450	13,409
31-40	144,380	2,945	98,833	9,731	15,856	17,015
41-50	248,995	--	123,256	28,317	86,327	11,095
51-60	203,924	--	79,450	48,366	63,848	12,260
61-70	191,197	--	59,301	14,034	97,624	20,238
71-80	82,896	--	15,023	15,619	49,443	2,811
81+	79,852	--	11,944	12,692	45,155	10,061
No manageable stand	242,211	2,400	81,326	35,945	98,262	24,278
All classes	1,583,762	79,650	600,395	251,652	527,028	125,037

Table 11.--Area of commercial forest land, by stand-age and broad management classes, forest industry,^a Georgia, 1982

Stand-age class (years)	All classes	Broad management class				
		Pine plantation	Natural pine	Oak-pine	Upland hardwood	Lowland hardwood
----- Acres -----						
0-10	1,369,767	1,091,367	50,321	102,138	107,031	18,910
11-20	1,265,575	831,760	169,877	72,250	98,027	93,661
21-30	873,317	443,947	283,145	46,076	32,239	67,910
31-40	662,206	19,525	372,864	53,696	92,214	123,907
41-50	398,678	--	111,723	52,272	100,807	133,876
51-60	239,302	--	50,616	19,520	45,670	123,496
61-70	118,171	--	6,297	11,186	38,028	62,660
71-80	108,672	--	2,672	2,603	20,455	82,942
81+	79,651	--	4,464	5,598	3,009	66,580
No manageable stand	820,909	34,912	215,867	103,667	259,957	206,506
All classes	5,936,248	2,421,511	1,267,846	469,006	797,437	980,448

^aIncludes 972,510 acres of other private land under long-term lease.

Table 12.--Area of commercial forest land, by stand-age and broad management classes, other private ownerships,^a Georgia, 1982

Stand-age class (years)	All classes	Broad management class				
		Pine plantation	Natural pine	Oak-pine	Upland hardwood	Lowland hardwood
----- Acres -----						
0-10	1,526,343	327,540	394,897	280,206	425,517	98,183
11-20	1,686,508	250,401	553,066	271,405	427,361	184,275
21-30	2,680,417	427,094	1,464,474	284,298	371,496	133,055
31-40	2,971,645	31,376	1,530,456	391,234	631,017	387,562
41-50	2,040,506	2,736	763,345	246,943	577,007	450,475
51-60	1,186,879	--	335,380	145,726	421,906	283,867
61-70	496,350	--	81,606	67,030	205,763	141,951
71-80	214,968	--	16,264	6,031	91,805	100,868
81+	223,033	--	9,528	6,170	94,169	113,166
No manageable stand	3,187,025	51,847	829,507	539,849	1,234,751	531,071
All classes	16,213,674	1,090,994	5,978,523	2,238,892	4,480,792	2,424,473

^aExcludes 972,510 acres of other private land under long-term lease to forest industry.

Table 13.--Area of noncommercial forest land, by forest-type group, Georgia, 1982

Forest-type group	All areas	Productive- reserved areas	Unproductive areas
Longleaf-slash pine	132,514	132,514	--
Loblolly-shortleaf pine	44,297	44,297	--
Oak-pine	2,293	2,293	--
Oak-hickory	90,357	90,048	309
Oak-gum-cypress	236,076	218,224	17,852
Elm-ash-cottonwood	3,217	3,217	--
All types	508,754	490,593	18,161

Table 15.--Number of growing-stock trees on commercial forest land, by species and diameter class, Georgia, 1982

Species	Diameter class (inches at breast height)														17.0- 18.9	19.0- 20.9	21.0- 28.9	29.0 and larger
	1.0- 2.9	3.0- 4.9	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	131,436	31,743	23,091	19,264	17,462	16,402	11,411	7,234	3,201	1,203	271	154						
Slash pine	1,431,266	399,687	434,207	309,802	157,487	72,566	34,049	14,415	5,439	2,147	989	457						
Shortleaf pine	537,245	176,746	138,622	93,734	63,961	34,069	18,947	7,550	2,459	822	215	120						
Loblolly pine	1,782,511	677,097	406,418	266,747	180,822	112,902	65,705	37,900	18,921	9,669	3,737	2,520						
Pond pine	42,956	9,053	10,123	9,160	5,862	3,838	2,371	1,238	864	211	175	61						
Virginia pine	204,061	63,698	57,609	34,024	26,701	14,095	5,761	1,590	468	85	17	36						
Pitch pine	3,827	--	835	771	773	395	346	365	158	63	63	--						
Table Mountain pine	566	--	--	317	91	56	83	--	--	19	--	--						
Spruce pine	3,814	1,250	681	374	422	230	288	354	67	24	62	54						
Sand pine	3,760	1,864	1,428	468	--	--	--	--	--	--	--	--						
Eastern white pine	36,026	20,054	6,687	1,778	2,208	1,324	1,144	747	824	377	419	435						
Eastern hemlock	15,781	11,447	2,948	206	386	275	227	202	30	--	36	13						
Spruce and fir	16,306	4,629	2,240	2,381	1,576	1,329	1,105	836	897	361	444	461						
Baldypress	262,757	148,344	49,764	25,823	14,647	10,469	6,952	3,658	1,879	687	225	254						
Pondypress	47,986	35,179	7,381	3,636	1,021	393	170	112	79	15	--	--						
Cedars	--	--	--	--	--	--	--	--	--	--	--	--						
Total softwoods	4,520,298	1,580,791	1,142,034	768,485	473,419	268,343	148,559	76,201	35,286	15,718	6,653	4,565						
Hardwood:																		
Select white oaks ^a	254,640	101,428	59,939	35,349	20,143	14,474	10,143	5,995	3,534	1,675	946	951						
Select red oaks ^b	57,090	18,749	12,112	9,197	5,164	3,530	3,061	1,933	1,393	705	579	605						
Chestnut oak	94,702	24,807	28,877	16,937	6,094	6,402	4,702	3,205	1,691	935	507	503						
Other white oaks	132,930	60,693	31,695	15,352	10,130	6,864	3,129	2,002	1,185	769	352	592						
Other red oaks	1,171,451	646,035	237,196	111,445	67,333	42,407	28,893	15,843	9,373	5,634	2,890	3,880						
Hickory	393,877	226,324	82,311	35,974	19,673	13,012	6,399	5,316	2,653	1,033	527	638						
Yellow birch	669	--	--	--	--	--	--	--	--	--	--	--						
Hard maple	19,813	12,198	4,983	1,158	1,044	222	91	101	--	16	--	--						
Soft maple	546,274	354,938	104,666	39,037	21,621	11,323	6,191	3,814	2,434	1,009	642	566						
Beech	11,312	6,640	2,093	553	546	242	272	182	241	226	88	217						
Sweetgum	1,258,140	745,298	263,961	118,188	59,452	33,023	18,262	10,293	5,008	2,528	881	881						
Tupelo and blackgum	925,604	495,799	195,371	96,753	54,627	34,308	23,791	12,472	6,372	3,470	1,204	1,293						
Ash	94,540	52,156	19,505	6,624	6,705	3,914	2,630	1,547	658	391	174	214						
Cottonwood	1,152	168	180	522	116	48	53	--	--	32	13	20						
Basewood	3,419	2,243	464	--	66	286	273	61	22	--	--	--						
Yellow-poplar	275,550	130,494	52,330	28,440	20,068	13,648	11,919	7,944	5,250	2,664	1,441	1,284						
Bay and magnolia	217,425	140,307	38,040	18,387	9,939	4,645	2,931	1,463	925	455	187	126						
Black cherry	114,839	78,550	24,743	7,829	2,275	795	480	120	--	17	--	30						
Black walnut	3,457	988	988	964	208	185	35	37	--	30	14	8						
Sycamore	5,796	1,089	1,210	985	1,259	283	294	234	144	154	91	53						
Black locust	2,503	1,240	--	582	189	346	58	65	--	23	--	--						
Elm	125,999	70,253	31,298	10,951	6,820	3,188	1,138	522	522	305	123	121						
Other eastern hardwoods	351,569	240,921	77,465	20,210	6,127	2,909	1,882	871	487	339	202	153						
Total hardwoods	6,062,751	3,411,987	1,269,427	575,437	319,599	196,054	126,769	74,636	41,892	22,410	11,211	12,135						
All species	10,583,049	4,992,778	2,411,461	1,343,922	793,018	464,397	275,328	150,837	77,178	38,128	17,864	16,700						

^a Includes white, swamp chestnut, and chinkapin oaks.

^b Includes cherrybark, northern red, and Shumard oaks.

Table 16.--Merchantable volume of all live trees on commercial forest land, by species and diameter class, Georgia, 1982

Species	Diameter class (inches at breast height)													29.0 and larger
	All classes	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			
Softwood:														
Longleaf pine	1,051,921	52,485	117,553	217,533	236,391	211,230	124,336	61,499	16,502	14,392				
Slash pine	4,313,907	835,956	1,017,550	908,272	689,154	422,186	222,592	111,939	63,821	38,658	3,779			
Shortleaf pine	1,695,854	218,769	372,924	371,683	358,054	211,282	96,002	41,997	14,731	10,412				
Loblolly pine	6,948,710	626,030	1,030,609	1,257,412	1,232,086	1,058,890	747,240	503,011	243,988	236,429	13,015			
Pond pine	230,368	23,815	34,010	43,790	41,983	31,211	30,786	9,913	9,638	5,222				
Virginia pine	580,007	98,864	168,574	155,023	94,313	40,014	16,710	5,126	1,383					
Pitch pine	44,937	1,959	5,577	4,997	5,477	9,501	5,348	3,982	4,323	3,773				
Table Mountain pine	3,910	897	1,024	432	1,002			555						
Spruce pine	38,012	945	3,349	3,547	5,386	10,249	2,741	1,413	4,114	4,769	1,499			
Sand pine	831													
Eastern white pine	193,690	4,989	13,032	13,284	18,188	18,556	30,392	17,814	25,921	46,350	5,164			
Eastern hemlock	20,344	519	2,380	2,871	3,881	3,982	832		2,141	1,191	2,547			
Spruce and fir														
Baldcypress	200,859	8,052	9,003	15,941	21,079	22,366	31,827	15,599	24,743	37,682	14,567			
Pondcypress	616,066	72,616	96,965	122,682	114,687	86,233	56,863	26,829	10,727	19,348	9,116			
Cedars	24,705	7,860	4,301	3,394	3,130	2,634	2,401	920			65			
Total softwoods	15,964,121	1,954,587	2,876,851	3,120,861	2,824,811	2,128,334	1,368,070	800,597	422,032	418,291	49,687			
Hardwood:														
Select white oaks ^a	1,085,603	98,386	114,358	158,769	179,903	157,986	131,747	79,319	57,664	92,021	15,450			
Select red oaks ^b	405,492	28,339	32,246	41,328	53,672	51,520	52,746	34,420	37,326	59,445	14,450			
Chestnut oak	478,630	43,547	37,043	64,532	80,230	76,896	54,941	44,798	27,058	43,053	6,532			
Other white oaks	558,320	43,351	59,457	70,292	58,368	60,018	48,617	43,608	27,620	88,463	58,526			
Other red oaks	3,312,643	304,708	403,398	457,873	498,048	404,721	330,976	262,967	173,131	362,217	114,604			
Hickory	821,941	83,145	108,133	131,009	107,504	137,613	98,848	54,325	34,096	63,240	4,028			
Yellow birch														
Hard maple	22,539	3,675	8,482	3,486	1,373	2,877	300	2,076		270				
Soft maple	967,658	151,198	159,742	147,519	127,001	118,703	95,413	56,113	44,320	61,471	6,178			
Beech	83,838	3,381	3,354	3,983	5,041	4,979	9,312	13,897	8,195	26,349	5,347			
Sweetgum	2,133,675	253,337	343,658	381,831	346,247	299,079	200,090	133,738	79,658	84,332	11,705			
Tupelo and blackgum	2,421,527	292,584	363,293	404,013	440,069	334,102	228,606	160,897	68,195	104,229	25,539			
Ash	291,338	22,865	46,930	43,697	49,722	43,261	26,341	20,277	11,834	21,187	5,224			
Cottonwood	9,554	1,549	1,009	870	1,904			1,737	859	1,626				
Basewood	12,277		1,013	2,935	4,957	1,518	581			712				
Yellow-poplar	1,339,980	79,887	126,407	136,147	222,966	217,355	190,446	129,620	88,139	113,496	15,517			
Bay and magnolia	364,963	58,912	68,403	56,862	54,479	44,674	34,772	19,885	11,660	10,770	4,546			
Black cherry	71,860	25,749	20,515	9,924	7,854	3,906		824		3,088				
Black walnut	10,248	2,035	1,061	1,588	836	1,419		1,717	626	966				
Sycamore	49,748	4,368	8,966	3,183	5,460	6,284	4,994	6,992	5,258	4,243				
Black locust	17,299	3,542	2,283	4,263	807	3,059	413	1,736	12	1,184				
Elm	224,106	27,255	39,701	36,938	25,672	33,198	21,084	16,001	10,817	12,397	1,043			
Other eastern hardwoods	703,384	223,877	146,092	121,869	73,500	47,088	29,460	25,133	18,487	16,207	1,671			
Total hardwoods	15,386,623	1,755,690	2,095,544	2,302,911	2,345,613	2,050,256	1,559,687	1,110,080	704,955	1,170,966	290,921			
All species	31,350,744	3,710,277	4,972,395	5,423,772	5,170,424	4,178,590	2,927,757	1,910,677	1,126,987	1,589,257	340,608			

^aIncludes white, swamp white, swamp chestnut, and chinquapin oaks.^bIncludes cherrybark, northern red, and shumard oaks.

Table 18.--Volume of sawtimber on commercial forest land, by species and diameter class, Georgia, 1982

Species	All classes	Diameter class (inches at breast height)											29.0 and larger
		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					
----- Thousand board feet -----													
Softwood:													
Longleaf pine	4,445,335	882,605	1,138,749	1,133,843	713,529	374,472	105,352	96,785					
Slash pine	11,321,151	3,363,533	3,147,421	2,192,066	1,260,950	673,907	398,676	257,397	27,201				
Shortleaf pine	4,961,623	1,355,517	1,606,362	1,071,802	524,384	245,946	90,712	66,900					
Loblolly pine	25,385,643	4,406,894	5,413,295	5,325,461	4,126,689	2,961,523	1,512,884	1,545,427	93,470				
Pond pine	824,727	163,431	189,869	157,278	164,958	57,758	58,104	33,329					
Virginia pine	1,204,290	529,213	385,373	176,971	78,326	26,692	7,515						
Pitch pine	190,031	14,383	23,657	47,076	29,180	23,229	27,211	25,295					
Table Mountain pine	9,710	1,750	4,687			3,273							
Spruce pine	166,415	15,771	24,860	49,840	13,682	7,249	21,431	25,331	8,251				
Sand pine													
Eastern white pine	940,172	47,275	78,045	89,615	159,356	98,217	149,537	284,493	33,634				
Eastern hemlock	84,949	10,243	16,193	18,287	4,103		12,062	7,152					
Spruce and fir													
Baldcypress	857,398	42,829	76,958	96,672	153,443	80,221	133,257	211,181	62,837				
Pondcypress	1,816,090	373,742	440,555	374,509	274,934	137,756	56,984	110,513	47,097				
Cedars	51,215	11,466	11,440	13,935	11,248	3,126							
Total softwoods	52,258,749	11,218,652	12,557,664	10,747,355	7,514,782	4,693,369	2,573,725	2,663,803	289,399				
Hardwood:													
Select white oaks ^a	2,920,536		577,762	605,464	554,130	363,934	274,288	475,251	69,707				
Select red oaks ^b	1,246,057		167,976	187,363	204,903	153,251	162,936	297,324	72,304				
Chestnut oak	1,248,457		228,073	273,937	212,307	178,744	125,097	197,759	32,540				
Other white oaks	1,326,035		1,634,421	1,96,354	172,000	164,294	104,364	305,560	220,042				
Other red oaks	9,280,751		1,714,148	1,620,634	1,437,792	1,222,238	828,956	1,889,812	567,171				
Hickory	2,107,181		352,819	539,484	443,469	256,786	165,991	330,102	18,537				
Yellow birch													
Hard maple	20,737		5,017	11,746		3,974							
Soft maple	1,610,986		326,224	355,885	326,259	195,960	161,859	219,792	25,007				
Beech	228,023		16,664	18,952	36,025	42,935	19,522	85,228	8,697				
Sweetgum	5,032,814		1,205,414	1,245,382	933,160	679,854	429,295	485,911	53,798				
Tupelo and blackgum	4,982,900		1,251,471	1,185,731	902,666	705,879	311,263	499,038	126,852				
Ash	671,168		155,266	161,566	99,929	87,117	48,735	96,552	22,003				
Cottonwood	25,936		4,763			8,257	4,365	8,551					
Basswood	27,940		16,997	5,377	2,425								
Yellow-poplar	4,523,616		786,044	924,130	909,418	674,255	483,595	663,862	82,312				
Bay and magnolia	643,390		158,887	145,610	135,943	89,956	45,206	50,447	17,341				
Black cherry	55,267		27,035	10,921		3,872		13,439					
Black walnut	17,310		2,893	2,603		6,101		2,233					
Sycamore	140,293		16,755	23,313	21,248	33,048	26,422	19,507					
Black locust	12,183		2,818	6,017		3,348							
Flm	449,891		81,153	118,469	76,248	72,239	41,237	60,545					
Other eastern hardwoods	411,860		95,092	75,119	62,172	62,787	51,508	62,102	3,080				
Total hardwoods	36,983,331		7,356,685	7,714,057	6,530,094	5,008,829	3,286,872	5,764,262	1,322,532				
All species	89,242,080		11,218,652	19,914,349	14,044,876	9,702,198	5,860,597	8,428,065	1,611,931				

^aIncludes white, swamp white, swamp chestnut, and chinkapin oaks.^bIncludes cherrybark, northern red, and Shumard oaks.

Table 19.--Volume of sawtimber on commercial forest land, by species, size class, and log grade, Georgia, 1982

Species	All size classes					Trees 15.0 inches d.b.h. and larger				
	All	Log grade				All	Log grade			
	Grades	1	2	3	4	Grades	1	2	3	4
----- Thousand board feet -----										
Softwood:										
Yellow pines ^a	48,508,925	11,256,008	6,306,160	30,946,757	(b)	15,687,018	5,019,846	2,039,312	8,627,860	(b)
Cypress ^c	2,673,488	369,155	1,495,434	808,899	--	1,268,223	355,102	596,065	317,056	--
Other eastern softwoods ^c	1,076,336	110,274	125,424	538,817	301,821	779,837	101,379	77,984	343,128	257,346
Total	52,258,749	11,735,437	7,927,018	32,294,473	301,821	17,735,078	5,476,327	2,713,361	9,288,044	257,346
Hardwood:^d										
Select white and red oaks	4,166,593	833,386	891,008	1,700,474	741,725	2,628,028	833,386	640,075	840,087	314,480
Other white and red oaks	11,855,243	2,084,970	2,576,596	5,001,782	2,191,895	7,658,676	2,084,970	1,880,415	2,518,314	1,174,977
Hickory	2,107,181	303,721	386,499	951,665	465,296	1,214,885	303,721	279,424	425,210	206,530
Hard maple	20,737	636	4,192	10,372	5,537	3,974	636	1,510	1,152	676
Sweetgum	5,032,814	800,426	1,185,992	2,594,755	451,641	2,582,018	800,426	671,325	903,706	206,561
Ash, walnut, and black cherry	743,745	156,292	193,837	345,157	48,459	383,461	141,881	107,369	107,369	26,842
Yellow-poplar	4,523,616	956,570	922,930	1,653,883	990,233	2,813,442	956,570	478,285	815,898	562,689
Other hardwoods	8,533,402	1,157,026	2,155,034	4,026,665	1,194,677	4,628,105	1,157,026	1,295,869	1,527,275	647,935
Total	36,983,331	6,293,027	8,316,088	16,284,753	6,089,463	21,912,589	6,278,616	5,354,272	7,139,011	3,140,690
All species	89,242,080	18,028,464	16,243,106	48,579,226	6,391,284	39,647,667	11,754,943	8,067,633	16,427,055	3,398,036

^aBased on "Southern Pine Log Grades for Yard and Structural Lumber," Research Paper SE-39, published by the Southeastern Forest Experiment Station in 1968.

^bNot applicable.

^cBased on "Sawlog Grades for Eastern White Pine," Research Paper NE-205, published by the Northeastern Forest Experiment Station in 1971.

^dBased on "A Guide to Hardwood Log Grading (revised)," General Technical Report NE-1, published by the Northeastern Forest Experiment Station in 1973.

Table 20.--Volume of all live timber and associated green weight of forest biomass on commercial forest land, by class of material, and by softwood and hardwood, Georgia, 1982

Class of material	Volume ^a			Associated green weight ^b		
	All species	Softwood	Hardwood	All species	Softwood	Hardwood
	----- Thousand cubic feet -----			----- Hundred thousand pounds -----		
Sawtimber trees:						
Saw-log portion	17,398,227	10,152,857	7,245,370	13,183,958	7,531,824	5,652,134
Upper stem	2,110,527	931,048	1,179,479	1,610,806	690,691	920,115
Total ^c	19,508,754	11,083,905	8,424,849	14,794,764	8,222,515	6,572,249
Poletimber trees ^c	10,063,442	4,798,468	5,264,974	7,387,137	3,553,389	3,833,748
All growing stock ^c	29,572,196	15,882,373	13,689,823	22,181,901	11,775,904	10,405,997
Rough trees ^c	1,466,833	70,093	1,396,740	1,117,528	51,616	1,065,912
Rotten trees ^c	311,715	11,655	300,060	239,043	8,583	230,460
Saplings ^d	5,696,991	1,865,945	3,831,046	4,480,488	1,310,853	3,169,635
Stumps, ^e tops, and limbs	7,080,946	3,100,124	3,980,822	5,308,827	2,283,066	3,025,761
Total, all classes	44,128,681	20,930,190	23,198,491	33,327,787	15,430,022	17,897,765

^aExcludes bark. Excludes 20,560 thousand cubic feet of palm.

^bIncludes bark. Excludes 7,199 hundred thousand pounds of palm.

^cBole portion of trees 5.0 inches d.b.h. and larger.

^dIncludes entire tree above ground.

^eOf all live trees 5.0 inches d.b.h. and larger.

Table 21.--Total cubic volume of all live trees on commercial forest land, by species and diameter class, Georgia, 1982

Species	Diameter class (inches at breast height)														19.0- 20.9	21.0- 28.9	29.0 and larger
	1.0- 2.9	3.0- 4.9	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 cubic feet ---																	
Softwood:																	
Longleaf pine	1,262,943	37,643	73,137	141,536	251,125	268,220	237,543	139,153	68,591	18,383	15,990	--	--	--	--	--	--
Slash pine	6,030,321	133,677	1,177,017	1,232,040	1,052,092	783,392	475,527	289,364	124,987	71,119	42,992	4,188	--	--	--	--	--
Shortleaf pine	2,182,682	34,041	131,896	299,928	450,040	432,380	240,086	108,595	47,363	16,580	11,699	--	--	--	--	--	--
Loblolly pine	8,736,669	127,521	426,752	888,202	1,256,335	1,466,226	1,410,423	1,200,687	842,661	565,233	273,564	14,519	--	--	--	--	--
Pond pine	284,535	2,294	10,459	41,128	51,219	48,497	35,836	35,215	11,310	11,002	5,939	--	--	--	--	--	--
Virginia pine	823,213	26,248	101,424	130,758	202,238	181,096	108,941	45,941	19,137	5,853	4,309	--	--	--	--	--	--
Pitch pine	53,774	1,332	2,621	6,614	5,827	6,324	10,926	6,134	4,560	4,942	4,309	--	--	--	--	--	--
Table Mountain pine	4,574	--	1,115	1,192	496	1,143	--	--	628	--	--	--	--	--	--	--	--
Spruce pine	45,159	471	1,432	3,999	4,104	6,166	11,601	3,090	1,587	4,610	5,335	1,672	--	--	--	--	--
Sand pine	3,906	573	2,015	1,318	--	--	--	--	--	--	--	--	--	--	--	--	--
Eastern white pine	233,412	3,163	4,709	6,456	15,659	21,220	21,540	35,166	20,582	29,909	53,408	5,941	--	--	--	--	--
Eastern hemlock	29,923	2,241	3,955	772	2,882	4,497	4,584	953	--	2,436	1,352	2,882	--	--	--	--	--
Spruce and fir	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Baldcypress	253,014	1,386	3,413	11,718	11,588	19,806	27,187	38,561	18,805	29,909	45,783	19,056	--	--	--	--	--
Pondcypress	937,063	33,705	64,144	124,367	136,113	162,875	148,735	110,651	72,383	34,010	24,565	11,922	--	--	--	--	--
Cedars	49,002	7,469	8,594	12,187	5,518	4,177	3,785	2,897	1,093	--	124	--	--	--	--	--	--
Total softwoods	20,930,190	384,596	1,481,349	2,762,664	3,506,887	3,650,451	3,247,219	2,425,267	1,553,309	904,622	476,624	476,022	60,180	--	--	--	--
Hardwood:																	
Select white oaks ^a	1,503,683	86,043	144,073	149,674	200,998	224,795	195,931	162,969	98,127	71,147	113,722	19,898	--	--	--	--	--
Select red oaks ^b	531,642	17,176	38,926	41,393	51,774	66,733	64,014	65,437	42,470	46,347	73,403	17,999	--	--	--	--	--
Chestnut oak	652,412	41,645	112,885	47,442	80,477	99,020	94,399	67,356	17,579	10,662	33,372	6,714	--	--	--	--	--
Other white oaks	791,644	24,447	66,777	79,884	90,465	74,347	75,899	61,124	54,965	34,576	110,752	73,470	--	--	--	--	--
Other red oaks	4,806,418	194,764	317,408	480,403	540,913	586,084	505,731	411,784	327,738	215,775	453,037	146,243	--	--	--	--	--
Hickory	1,226,023	67,855	110,613	131,130	142,538	164,789	168,158	119,953	65,822	41,222	76,419	5,027	--	--	--	--	--
Yellow birch	131	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Hard maple	42,560	6,462	5,414	10,946	4,334	1,678	3,472	475	2,571	--	446	--	--	--	--	--	--
Soft maple	1,648,256	194,618	245,752	214,491	201,249	180,276	153,288	142,372	114,189	52,874	74,201	7,482	--	--	--	--	--
Beech	112,597	2,713	5,105	4,417	5,408	6,296	6,148	11,536	6,714	10,662	33,372	6,714	--	--	--	--	--
Sweetgum	3,085,024	196,214	308,082	375,796	427,455	451,997	401,431	343,321	228,746	152,192	95,733	13,532	--	--	--	--	--
Tupelo and blackgum	3,640,318	242,346	307,399	438,349	470,643	503,824	542,178	408,919	279,907	197,519	130,171	34,686	--	--	--	--	--
Ash	405,669	24,822	34,385	32,570	57,735	51,577	49,835	30,205	23,165	13,532	24,215	6,001	--	--	--	--	--
Cottonwood	11,921	67	1,259	1,228	1,046	2,264	--	--	2,006	990	1,872	--	--	--	--	--	--
Baswood	16,869	1,067	1,425	1,205	3,416	5,727	1,809	687	--	--	894	639	--	--	--	--	--
Yellow-poplar	1,659,645	36,926	80,116	106,445	150,539	180,145	254,013	245,962	214,793	145,870	127,746	17,868	--	--	--	--	--
Bay and magnolia	567,215	47,914	62,199	86,880	86,401	68,925	65,151	53,078	41,034	23,399	12,860	5,485	--	--	--	--	--
Black cherry	183,354	40,280	49,724	37,740	25,549	11,825	9,168	4,574	--	--	3,535	--	--	--	--	--	--
Black walnut	14,332	234	1,265	2,928	1,330	1,945	999	1,719	--	--	1,138	--	--	--	--	--	--
Sycamore	61,503	596	1,582	5,911	10,933	6,394	7,324	5,799	8,089	6,081	4,974	--	--	--	--	--	--
Black locust	24,515	581	1,462	5,021	2,898	5,274	982	3,819	2,236	36	1,652	--	--	--	--	--	--
Elm	358,230	33,338	50,150	39,132	49,885	44,543	30,431	39,006	24,698	18,698	14,499	1,247	--	--	--	--	--
Other eastern hardwoods	1,854,530	396,953	493,790	345,579	196,180	157,391	92,212	59,288	36,756	31,594	19,683	2,215	--	--	--	--	--
Total hardwoods	23,198,491	1,566,249	2,264,797	2,626,144	2,700,437	2,849,963	2,474,772	1,877,972	1,339,550	850,659	1,427,494	366,685	--	--	--	--	--
All species	44,128,681	1,950,845	3,746,146	5,388,808	6,207,324	6,500,414	6,100,988	4,900,039	3,431,281	2,244,172	1,328,283	1,903,516	426,865	--	--	--	--

^a Includes white, swamp chestnut, and chinkapin oaks.
^b Includes cherrybark, northern red, and Shumard oaks.

Table 22.--Green weight of forest biomass on commercial forest land, by species and diameter class, Georgia, 1982

Species	Diameter class (inches at breast height)														21.0- 28.9	29.0 and larger	
	1.0- 2.9	3.0- 4.9	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					
Hundred thousand pounds																	
Softwood:																	
Longleaf pine	985,308	8,473	26,741	53,737	109,878	194,581	210,795	188,108	110,674	54,769	14,714	12,838	--				
Slash pine	4,582,937	97,631	485,832	887,117	961,663	800,831	601,448	366,784	192,919	96,873	55,197	33,402	3,260				
Shortleaf pine	1,539,431	27,227	95,560	193,041	312,461	312,000	294,815	172,298	77,852	33,933	11,869	8,375	--				
Loblolly pine	6,395,330	91,570	275,385	669,670	931,410	1,085,415	1,035,867	878,050	614,624	411,641	198,978	192,185	10,535				
Pond pine	203,083	1,634	6,751	23,129	29,350	36,332	34,615	25,667	25,279	8,133	7,915	4,278	--				
Virginia pine	618,844	19,138	71,951	108,326	150,210	134,623	80,855	34,059	14,180	4,335	1,167	--					
Pitch pine	36,923	135	950	1,754	4,870	3,836	4,238	7,425	4,192	3,131	3,410	2,982	--				
Table Mountain pine	2,735	--	--	616	701	296	712	--	410	410	--	--	--				
Spruce pine	32,563	343	778	1,039	2,886	2,931	4,421	8,360	2,232	1,149	3,341	3,869	1,214				
Sand pine	2,741	423	1,436	882	--	--	--	--	--	--	--	--	--				
Eastern white pine	153,683	2,289	3,129	4,442	10,411	10,415	14,362	14,560	23,505	13,624	19,545	33,774	3,627				
Eastern hemlock	23,219	1,713	2,932	683	2,345	2,660	3,565	3,619	751	--	1,870	1,017	2,064				
Spruce and fir	--	--	--	--	--	--	--	--	--	--	--	--	--				
Baldcypress	187,684	1,057	2,523	5,744	6,288	13,148	18,286	20,009	29,156	14,462	23,541	36,940	16,530				
Pondcypress	628,351	25,674	47,483	63,526	79,859	101,159	102,329	81,719	55,931	27,236	11,190	21,230	11,015				
Cedars	37,190	5,708	6,387	9,744	4,174	3,029	2,775	2,332	2,140	809	--	--	92				
Total softwoods	15,430,022	283,015	1,027,838	2,023,450	2,606,486	2,701,256	2,409,083	1,802,990	1,153,435	670,505	352,737	350,982	48,245				
Hardwood:																	
Select white oaks ^a	1,248,324	31,435	71,252	109,915	118,066	163,220	188,247	164,841	138,186	83,759	61,419	99,766	18,218				
Select red oaks ^b	443,351	5,757	15,382	30,009	33,694	43,250	54,885	53,092	54,597	35,824	38,931	62,252	15,678				
Chestnut oak	519,863	10,574	36,039	46,906	36,316	62,430	75,947	74,084	53,838	44,768	27,322	44,579	7,060				
Other white oaks	691,012	22,942	38,914	49,462	64,341	76,646	62,419	65,574	53,659	49,305	31,478	103,936	72,336				
Other red oaks	4,040,753	189,614	286,840	369,283	435,930	484,280	529,819	428,322	349,867	278,016	183,333	383,375	122,174				
Hickory	1,010,620	62,900	97,040	95,702	111,009	134,658	108,193	138,223	100,049	55,721	35,327	67,142	4,649				
Yellow birch	118	--	--	--	--	--	--	--	--	--	--	--	--				
Hard maple	36,332	5,744	5,801	4,329	9,028	3,768	1,467	3,061	421	2,308	--	405	--				
Soft maple	1,230,459	145,591	176,000	157,481	153,095	138,047	111,943	106,741	86,698	51,594	40,570	56,981	5,718				
Beech	97,861	2,415	2,588	3,731	3,356	3,920	4,753	4,996	9,792	15,316	9,447	31,008	6,539				
Sweetgum	2,329,591	161,775	254,233	284,304	310,845	330,362	295,036	254,036	170,747	114,705	68,838	73,963	10,747				
Tupelo and blackgum	2,441,389	194,544	245,600	243,205	281,001	315,180	348,386	275,674	196,194	143,551	63,042	102,725	32,287				
Ash	268,589	20,280	28,030	23,841	39,673	33,680	36,441	30,578	18,140	13,583	7,788	13,426	3,129				
Cottonwood	8,415	50	191	1,364	815	699	1,576	3,578	1,514	1,514	760	1,446	--				
Basswood	11,423	810	1,049	--	759	2,193	3,827	1,215	467	--	--	640	463				
Yellow-poplar	1,182,332	26,618	54,963	72,473	103,203	124,923	180,255	176,497	155,490	106,501	72,964	94,870	13,575				
Bay and magnolia	367,453	34,680	42,900	48,090	51,504	42,312	40,060	35,570	29,346	17,332	10,696	10,174	4,609				
Black cherry	128,420	30,655	36,832	25,105	16,671	7,765	5,634	2,840	--	612	--	2,306	--				
Black walnut	12,823	211	1,084	2,361	1,169	933	1,615	1,615	--	1,898	696	1,084	--				
Sycamore	43,045	451	1,171	3,136	6,638	2,438	4,287	5,292	4,376	6,297	4,873	4,086	--				
Black locust	23,235	514	1,251	4,234	2,750	5,301	991	3,766	547	2,201	37	1,643	--				
Elm	239,777	25,424	37,140	25,262	31,732	28,663	18,247	24,591	16,072	12,648	8,699	10,336	963				
Other eastern hardwoods	1,522,580	345,852	416,374	284,445	156,980	125,797	66,489	42,757	27,322	23,221	17,051	14,771	1,521				
Total hardwoods	17,897,765	1,318,954	1,850,681	1,884,638	1,968,475	2,131,304	2,139,835	1,893,545	1,465,808	1,060,674	683,271	1,180,914	319,666				
All species	33,327,787	1,601,969	2,878,519	3,908,088	4,574,961	4,832,560	4,548,918	3,696,535	2,619,243	1,731,179	1,036,008	1,531,896	367,911				

^aIncludes white, swamp chestnut, and chinkapin oaks.

^bIncludes cherrybark, northern red, and Shumard oaks.

Table 24.--Volume of growing stock on commercial forest land, by ownership class, species group, and diameter class, Georgia, 1982

Ownership class and species group	Diameter class (inches at breast height)											Thousand cubic feet
	All classes	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- 22.9	23.0- 24.9	
National Forest:												
Softwood	406,717	18,405	56,761	59,220	53,997	61,622	45,053	36,106	27,246	40,596	7,711	
Hardwood	835,337	65,422	86,935	107,013	111,785	104,083	114,791	74,651	53,690	103,415	13,552	
Total	1,242,054	83,827	143,696	166,233	165,782	165,705	159,844	110,757	80,936	144,011	21,263	
Other public:												
Softwood	921,960	56,791	94,541	146,570	169,518	161,204	122,932	75,153	49,244	43,852	2,155	
Hardwood	517,455	58,867	71,672	73,113	83,048	88,290	48,309	34,667	26,023	31,287	2,179	
Total	1,439,415	115,658	166,213	219,683	252,566	249,494	171,241	109,820	75,267	75,139	4,334	
Forest industry:												
Softwood	3,313,908	613,114	750,120	635,241	490,159	338,619	222,629	117,839	60,809	75,152	10,226	
Hardwood	2,201,621	203,136	284,346	292,893	300,434	319,341	231,083	190,922	127,189	207,091	45,186	
Total	5,515,529	816,250	1,034,466	928,134	790,593	657,960	453,712	308,761	187,998	282,243	55,412	
Forest industry-leased:												
Softwood	443,621	130,176	121,468	80,489	49,817	26,763	10,880	9,419	6,322	7,764	523	
Hardwood	288,610	41,701	44,428	51,650	37,766	33,258	27,411	22,293	9,195	20,438	470	
Total	732,231	171,877	165,896	132,139	87,583	60,021	38,291	31,712	15,517	28,202	993	
Other private:												
Softwood	10,796,167	1,118,219	1,838,873	2,183,769	2,052,225	1,534,106	962,166	560,046	277,188	247,271	22,304	
Hardwood	9,846,800	1,026,845	1,320,112	1,536,841	1,639,517	1,365,808	1,024,048	701,028	417,989	667,876	146,736	
Total	20,642,967	2,145,064	3,158,985	3,720,610	3,691,742	2,899,914	1,986,214	1,261,074	695,177	915,147	169,040	
All ownerships:												
Softwood	15,882,373	1,936,705	2,861,763	3,105,289	2,815,716	2,122,314	1,363,660	798,563	420,809	414,635	42,919	
Hardwood	13,689,823	1,395,971	1,807,493	2,061,510	2,172,550	1,910,780	1,445,642	1,023,561	634,086	1,030,107	208,123	
Total	29,572,196	3,332,676	4,669,256	5,166,799	4,988,266	4,033,094	2,809,302	1,822,124	1,054,895	1,444,742	251,042	

Table 25.--Volume of sawtimber on commercial forest land, by ownership class, species group, and diameter class, Georgia, 1982

Ownership class and species group	Diameter class (inches at breast height)										Thousand board feet
	All classes	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		
National Forest:											
Softwood	1,660,952	209,449	234,363	303,776	240,503	207,542	163,266	251,510	50,543		
Hardwood	2,506,360	--	372,716	409,768	500,088	344,212	260,136	541,286	78,154		
Total	4,167,312	209,449	607,079	713,544	740,591	551,754	423,402	792,796	128,697		
Other public:											
Softwood	3,872,789	544,557	764,617	823,879	684,548	446,447	305,477	287,866	15,398		
Hardwood	1,367,256	--	286,203	358,238	220,905	172,487	140,454	174,891	14,078		
Total	5,240,045	544,557	1,050,820	1,182,117	905,453	618,934	445,931	462,757	29,476		
Forest industry:											
Softwood	8,943,177	2,276,805	2,173,036	1,694,622	1,211,350	682,909	364,397	474,472	65,586		
Hardwood	6,422,894	--	1,013,683	1,292,559	1,046,990	944,494	662,448	1,173,080	289,640		
Total	15,366,071	2,276,805	3,186,719	2,987,181	2,258,340	1,627,403	1,026,845	1,647,552	355,226		
Forest industry-leased:											
Softwood	835,696	280,678	216,025	132,204	60,263	55,030	38,958	48,998	3,540		
Hardwood	661,045	--	126,208	132,123	123,695	109,320	48,979	117,788	2,932		
Total	1,496,741	280,678	342,233	264,327	183,958	164,350	87,937	166,786	6,472		
Other private:											
Softwood	36,946,135	7,907,163	9,169,623	7,792,874	5,318,118	3,301,441	1,701,627	1,600,957	154,332		
Hardwood	26,025,776	--	5,557,875	5,521,369	4,638,416	3,438,316	2,174,855	3,757,217	937,728		
Total	62,971,911	7,907,163	14,727,498	13,314,243	9,956,534	6,739,757	3,876,482	5,358,174	1,092,060		
All ownerships:											
Softwood	52,258,749	11,218,652	12,557,664	10,747,355	7,514,782	4,693,369	2,573,725	2,663,803	289,399		
Hardwood	36,983,331	--	7,356,685	7,714,057	6,530,094	5,008,829	3,286,872	5,764,262	1,322,532		
Total	89,242,080	11,218,652	19,914,349	18,461,412	14,044,876	9,702,198	5,860,597	8,428,065	1,611,931		

Table 26.--Volume of growing stock on commercial forest land, by broad management class, species group, and stand-age class, Georgia, 1982

Broad management class and species group	All classes	No manageable stand	Stand-age class (years)										Total
			0-10	11-20	21-30	31-40	41-50	51-60	61-70	71-80	81+		
----- Thousand cubic feet -----													
Pine plantation:													
Softwood	2,352,622	20,544	35,777	743,852	1,406,829	142,302	3,318	--	--	--	--	--	
Hardwood	51,196	2,157	9,195	18,384	20,517	584	359	--	--	--	--	--	
Total	2,403,818	22,701	44,972	762,236	1,427,346	142,886	3,677	--	--	--	--	--	
Natural pine:													
Softwood	10,243,446	444,168	162,378	494,477	2,481,753	3,311,045	1,949,897	970,548	297,735	64,964	66,481		
Hardwood	1,294,849	31,177	30,236	52,309	204,534	412,008	342,462	135,211	68,219	15,957	2,736		
Total	11,538,295	475,345	192,614	546,786	2,686,287	3,723,053	2,292,359	1,105,759	365,954	80,921	69,217		
Oak-pine:													
Softwood	1,664,324	190,019	83,042	161,147	222,577	333,496	298,341	206,563	94,224	30,467	44,448		
Hardwood	1,430,981	96,788	48,971	95,055	187,539	333,105	341,082	185,432	88,706	33,157	21,146		
Total	3,095,305	286,807	132,013	256,202	410,116	666,601	639,423	391,995	182,930	63,624	65,594		
Upland hardwood:													
Softwood	625,960	88,377	32,771	54,747	52,313	112,589	111,391	86,483	31,909	38,644	16,736		
Hardwood	5,823,409	528,618	139,687	276,322	398,602	1,032,647	1,255,246	942,290	596,128	354,312	299,557		
Total	6,449,369	616,995	172,458	331,069	450,915	1,145,236	1,366,637	1,028,773	628,037	392,956	316,293		
Lowland hardwood:													
Softwood	996,021	61,282	23,441	52,758	59,774	150,134	148,184	130,765	92,742	98,013	178,928		
Hardwood	5,089,388	310,030	35,114	141,412	222,226	862,020	1,169,707	942,187	578,502	437,671	390,519		
Total	6,085,409	371,312	58,555	194,170	282,000	1,012,154	1,317,891	1,072,952	671,244	535,684	569,447		
All classes:													
Softwood	15,882,373	804,390	337,409	1,506,981	4,223,246	4,049,566	2,511,131	1,394,359	516,610	232,088	306,593		
Hardwood	13,689,823	968,770	263,203	583,482	1,033,418	2,640,364	3,108,856	2,205,120	1,331,555	841,097	713,958		
Total	29,572,196	1,773,160	600,612	2,090,463	5,256,664	6,689,930	5,619,987	3,599,479	1,848,165	1,073,185	1,020,551		

Table 27.--Net annual growth and removals of all live timber and growing stock on commercial forest land, by species, Georgia, 1981

Species	All live timber ^a		Growing stock	
	Net annual growth	Annual timber removals	Net annual growth	Annual timber removals
----- Thousand cubic feet -----				
Softwood:				
Yellow pines	1,159,787	1,085,705	1,154,875	1,079,333
Eastern white pine	8,507	2,284	8,498	2,284
Spruce and fir	--	--	--	--
Cypress	23,395	4,858	23,085	4,512
Other eastern softwoods	3,197	550	3,106	550
Total softwoods	1,194,886	1,093,397	1,189,564	1,086,679
Hardwood:				
Select white and red oaks	57,818	23,837	57,138	22,906
Other white and red oaks	186,432	102,884	180,340	93,600
Hickory	26,301	16,000	25,924	15,150
Yellow birch	--	--	--	--
Hard maple	1,780	395	1,563	395
Sweetgum	96,512	61,424	94,846	57,078
Ash, walnut, and black cherry	16,629	7,359	15,111	6,002
Yellow-poplar	78,138	40,545	77,549	38,770
Tupelo and blackgum	52,279	25,708	48,922	22,632
Bay and magnolia	10,513	3,952	9,774	3,346
Other eastern hardwoods	71,151	33,110	55,522	21,419
Total hardwoods	597,553	315,214	566,689	281,298
All species	1,792,439	1,408,611	1,756,253	1,367,977

^aMerchantable portion only.

Table 28.--Net annual growth and removals of growing stock on commercial forest land, by ownership class, and by softwood and hardwood, Georgia, 1981

Ownership class	Net annual growth			Annual timber removals		
	All species	Softwood	Hardwood	All species	Softwood	Hardwood
----- Thousand cubic feet -----						
National Forest	43,537	18,325	25,212	31,205	23,619	7,586
Other public	76,859	55,269	21,590	44,529	35,759	8,770
Forest industry	393,769	307,793	85,976	343,004	279,970	63,034
Forest industry-leased	60,278	48,978	11,300	72,822	67,400	5,422
Other private	1,181,810	759,199	422,611	876,417	679,931	196,486
All ownerships	1,756,253	1,189,564	566,689	1,367,977	1,086,679	281,298

Table 29.--Net annual growth and removals of sawtimber on commercial forest land, by species, Georgia, 1981

Species	Net annual	Annual timber
	growth	removals
Thousand board feet		
Softwood:		
Yellow pines	4,702,287	4,100,532
Eastern white pine	48,045	14,853
Spruce and fir	--	--
Cypress	97,196	15,359
Other eastern softwoods	10,399	491
Total softwoods	4,857,927	4,131,235
Hardwood:		
Select white and red oaks	222,628	83,429
Other white and red oaks	643,172	295,521
Hickory	83,627	46,537
Yellow birch	--	--
Hard maple	2,033	1,856
Sweetgum	317,110	169,444
Ash, walnut, and black cherry	43,456	17,945
Yellow-poplar	327,646	174,394
Tupelo and blackgum	152,923	81,210
Bay and magnolia	27,312	10,439
Other eastern hardwoods	136,214	67,054
Total hardwoods	1,956,121	947,829
All species	6,814,048	5,079,064

Table 30.--Net annual growth and removals of sawtimber on commercial forest land, by ownership class, and by softwood and hardwood, Georgia, 1981

Ownership class	Net annual growth			Annual timber removals		
	All species	Softwood	Hardwood	All species	Softwood	Hardwood
	Thousand board feet					
National Forest	197,834	96,379	101,455	149,147	122,799	26,34
Other public	351,789	286,604	65,185	177,133	143,000	34,13
Forest industry	1,287,103	988,015	299,088	1,211,260	1,009,062	202,19
Forest industry-leased	134,020	98,408	35,612	257,182	235,630	21,55
Other private	4,843,302	3,388,521	1,454,781	3,284,342	2,620,744	663,59
All ownerships	6,814,048	4,857,927	1,956,121	5,079,064	4,131,235	947,82

Table 31.--Mortality of all live timber, growing stock, and sawtimber on commercial forest land, by species, Georgia, 1981

Species	: All live : : timber ^a :		: Growing : : stock :		: Sawtimber :
	Thousand cubic feet		Thousand board feet		
Softwood:					
Yellow pines	207,814		203,835		524,458
Eastern white pine	926		926		6,327
Spruce and fir	---		---		---
Cypress	1,745		1,558		2,682
Other eastern softwoods	449		395		2,024
Total softwoods	210,934		206,714		535,491
Hardwood:					
Select white and red oaks	9,379		7,363		26,102
Other white and red oaks	54,417		40,748		141,632
Hickory	5,759		4,891		15,004
Yellow birch	---		---		---
Hard maple	306		125		611
Sweetgum	19,134		15,984		49,357
Ash, walnut, and black cherry	5,297		2,918		8,341
Yellow-poplar	7,887		7,254		22,729
Tupelo and blackgum	13,760		8,281		26,201
Bay and magnolia	3,027		1,714		5,058
Other eastern hardwoods	32,134		15,252		41,599
Total hardwoods	151,100		104,530		336,634
All species	362,034		311,244		872,125

^aMerchantable portion only.

Table 32.--Mortality of growing stock and sawtimber on commercial forest land, by ownership class, and by softwood and hardwood, Georgia, 1981

Ownership class	: Growing stock :			: Sawtimber :		
	: All species :	: Softwood :	: Hardwood :	: All species :	: Softwood :	: Hardwood :
	- - - Thousand cubic feet - - -			- - - Thousand board feet - - -		
National Forest	11,148	4,206	6,942	37,580	11,203	26,377
Other public	16,363	13,356	3,007	60,355	50,800	9,555
Forest industry	52,637	34,655	17,982	146,697	80,548	66,149
Forest industry-leased	7,112	5,764	1,348	13,410	9,333	4,077
Other private	223,984	148,733	75,251	614,083	383,607	230,476
All ownerships	311,244	206,714	104,530	872,125	535,491	336,634

Table 33.--Mortality of growing stock and sawtimber on commercial forest land, by cause of death, and by softwood and hardwood, Georgia, 1981

Cause of death	Growing stock			Sawtimber		
	All species	Softwood	Hardwood	All species	Softwood	Hardwood
	--- Thousand cubic feet ---			--- Thousand board feet ---		
Fire	6,723	4,654	2,069	10,288	7,019	3,269
Insects	88,424	86,702	1,722	289,277	286,167	3,110
Disease	64,126	45,568	18,558	140,062	85,238	54,824
Weather	32,505	16,750	15,755	123,257	56,089	67,168
Suppression	36,345	25,222	11,123	28,997	15,188	13,809
Animals	9,128	777	8,351	31,995	2,638	29,357
Undetermined	73,993	27,041	46,952	248,249	83,152	165,097
All causes	311,244	206,714	104,530	872,125	535,491	336,634

Table 34.--Output of timber products, by product, species group, and type of material, Georgia, 1981

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 fbm ^a	2,082,786	412,303	2,075,224	410,806	7,562	1,497
Hardwood	M fbm ^a	432,130	81,593	432,130	81,593	--	--
Total	M fbm ^a	2,514,916	493,896	2,507,354	492,399	7,562	1,497
Veneer logs and bolts:							
Softwood	M fbm ^a	248,784	43,999	248,784	43,999	--	--
Hardwood	M fbm ^a	75,091	12,878	75,091	12,878	--	--
Total	M fbm ^a	323,875	56,877	323,875	56,877	--	--
Pulpwood: ^b							
Softwood	Cords ^c	7,743,548	576,809	6,507,790	484,759	1,235,758	92,050
Hardwood	Cords ^c	1,123,203	84,795	817,834	61,742	305,369	23,053
Total	Cords ^c	8,866,751	661,604	7,325,624	546,501	1,541,127	115,103
Poles and piling:							
Softwood	M pieces	648	11,131	648	11,131	--	--
Hardwood	M pieces	--	--	--	--	--	--
Total	M pieces	648	11,131	648	11,131	--	--
Posts (round and split):							
Softwood	M pieces	3,613	2,309	3,613	2,309	--	--
Hardwood	M pieces	--	--	--	--	--	--
Total	M pieces	3,613	2,309	3,613	2,309	--	--
Other: ^d							
Softwood	M ft ³	17,229	17,229	611	611	16,618	16,618
Hardwood	M ft ³	546	546	--	--	546	546
Total	M ft ³	17,775	17,775	611	611	17,164	17,164
Total industrial products:							
Softwood		--	1,063,780	--	953,615	--	110,165
Hardwood		--	179,812	--	156,213	--	23,599
Total		--	1,243,592	--	1,109,828	--	133,764
Fuelwood: ^e							
Softwood	Cords	95,116	7,085	85,974	6,404	9,142	681
Hardwood	Cords	428,431	32,344	421,305	31,806	7,126	538
Total	Cords	523,547	39,429	507,279	38,210	16,268	1,219
All products: ^f							
Softwood		--	1,070,865	--	960,019	--	110,846
Hardwood		--	212,156	--	188,019	--	24,137
Total		--	1,283,021	--	1,148,038	--	134,983

^aInternational 1/4-inch rule.

^bRoundwood figures include an estimated 88,150 thousand cubic feet of roundwood chipped at other primary wood-using plants.

^cRough-wood basis (includes chips converted to equivalent standard cords).

^dIncludes particleboard, charcoal, and specialty products.

^eExcludes approximately 53,580 thousand cubic feet of plant byproducts used for industrial fuel.

^fExcludes 14,137 thousand cubic feet of plant byproducts used for litter and mulch.

Table 35.--Output of roundwood products, by product, species group, and source of material, Georgia, 1981

Product and species group	All sources	Growing-stock trees ^a			Cull trees ^a	Savable dead trees ^a	Other sources ^b
		Total	Sawtimber	Poletimber			
----- Thousand cubic feet -----							
Saw logs:							
Softwood	410,806	408,115	398,182	9,933	344	1,269	1,078
Hardwood	81,593	76,643	72,962	3,681	2,389	123	2,438
Total	492,399	484,758	471,144	13,614	2,733	1,392	3,516
Veneer logs and bolts:							
Softwood	43,999	43,999	43,999	--	--	--	--
Hardwood	12,878	12,142	11,956	186	320	--	416
Total	56,877	56,141	55,955	186	320	--	416
Pulpwood:							
Softwood	484,759	459,513	266,928	192,585	3,671	4,276	17,299
Hardwood	61,742	50,928	28,796	22,132	4,816	--	5,998
Total	546,501	510,441	295,724	214,717	8,487	4,276	23,297
Poles and piling:							
Softwood	11,131	11,131	11,006	125	--	--	--
Hardwood	--	--	--	--	--	--	--
Total	11,131	11,131	11,006	125	--	--	--
Posts (round and split):							
Softwood	2,309	2,309	707	1,602	--	--	--
Hardwood	--	--	--	--	--	--	--
Total	2,309	2,309	707	1,602	--	--	--
Other:							
Softwood	611	579	238	341	--	--	32
Hardwood	--	--	--	--	--	--	--
Total	611	579	238	341	--	--	32
Total industrial products:							
Softwood	953,615	925,646	721,060	204,586	4,015	5,545	18,409
Hardwood	156,213	139,713	113,714	25,999	7,525	123	8,852
Total	1,109,828	1,065,359	834,774	230,585	11,540	5,668	27,261
Fuelwood:							
Softwood	6,404	5,564	3,415	2,149	--	590	250
Hardwood	31,806	22,224	17,054	5,170	3,154	1,754	4,674
Total	38,210	27,788	20,469	7,319	3,154	2,344	4,924
All products:							
Softwood	960,019	931,210	724,475	206,735	4,015	6,135	18,659
Hardwood	188,019	161,937	130,768	31,169	10,679	1,877	13,526
Total	1,148,038	1,093,147	855,243	237,904	14,694	8,012	32,185

^aOn commercial forest land.

^bIncludes 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 36.--Annual timber removals from growing stock on commercial forest land, by item, and by softwood and hardwood, Georgia, 1981

Item	: All species :	Softwood :	Hardwood
- - - - Thousand cubic feet - - -			
Roundwood products:			
Saw logs	484,758	408,115	76,643
Veneer logs and bolts	56,141	43,999	12,142
Pulpwood	510,441	459,513	50,928
Poles and piling	11,131	11,131	--
Posts	2,309	2,309	--
Other	579	579	--
Fuelwood	27,788	5,564	22,224
All products	1,093,147	931,210	161,937
Logging residues	141,377	86,395	54,982
Other removals	133,453	69,074	64,379
Total removals	1,367,977	1,086,679	281,298

Table 37.--Annual timber removals from live sawtimber on commercial forest land, by item, and by softwood and hardwood, Georgia, 1981

Item	: All species :	Softwood :	Hardwood
- - - Thousand board feet - - -			
Roundwood products:			
Saw logs	2,397,872	2,011,453	386,419
Veneer logs and bolts	318,499	248,784	69,715
Pulpwood	1,613,734	1,448,429	165,305
Poles and piling	64,534	64,534	--
Posts	3,460	3,460	--
Other	1,291	1,291	--
Fuelwood	116,430	18,531	97,899
All products	4,515,820	3,796,482	719,338
Logging residues	205,099	122,308	82,791
Other removals	358,145	212,445	145,700
Total removals	5,079,064	4,131,235	947,829

Table 38.--Volume of unused residues at primary manufacturing plants, by species group, type of residue, and industry, Georgia, 1981

Species group and type of residue	All industries	Lumber	Veneer and plywood	Other
	----- <u>Thousand cubic feet</u> -----			
Softwood:				
Coarse ^a	1,243	1,243	--	--
Fine ^b	4,807	4,807	--	--
Total	6,050	6,050	--	--
Hardwood:				
Coarse ^a	501	501	--	--
Fine ^b	1,289	1,289	--	--
Total	1,790	1,790	--	--
All species:				
Coarse ^a	1,744	1,744	--	--
Fine ^b	6,096	6,096	--	--
Total	7,840	7,840	--	--

^aMaterial such as slabs and edgings.

^bMaterial such as sawdust and shavings.

Table 39.--Area of commercial forest land and associated inventory, net annual growth, and annual removals of growing stock, by species group, Georgia, 1982, with projections^a to 2012

Component and species group	Unit of measure	Inventory year		Projected to--	
		1982	1992	2002	2012
Area	M acres	23,733.7	22,926.8	22,428.3	22,024.9
Inventory:	M ft ³				
Softwood		15,882,373	16,133,300	16,239,100	16,080,600
Hardwood		13,689,823	15,191,300	16,002,300	16,079,100
Total		29,572,196	31,324,600	32,241,400	32,159,700
Net annual growth: ^b	M ft ³				
Softwood		1,189,564	1,188,800	1,147,300	1,110,100
Hardwood		566,689	600,700	600,100	562,700
Total		1,756,253	1,789,500	1,747,400	1,672,800
Annual removals: ^b	M ft ³				
Softwood		1,086,679	1,124,200	1,116,200	1,110,100
Hardwood		281,298	401,800	483,700	562,700
Total		1,367,977	1,526,000	1,599,900	1,672,800

^aProjection assumptions:

1. Area of commercial forest land will continue to decline but at a slower pace than the past 2 decades--declining by 1.7 million acres by 2012.
2. Forestry progress will continue at the rate indicated by recent trends.
3. Cut, starting at the 1981 level, will gradually come into balance with growth by 2011.
4. Mortality rates will moderate from the high levels recorded during the past remeasurement.

^bGrowth and removals are for the year prior to the inventory year.

Table 40.--Land area, by class, major forest type, and survey completion date, Georgia

Land use class	Survey completion date			Change 1972-1982
	1961	1972 ^a	1982	
----- Acres -----				
Forest land:				
Commercial forest land:				
Pine and oak-pine types	16,795,500	16,129,955	14,398,469	-1,731,486
Hardwood types	8,992,600	8,696,471	9,335,215	+638,744
Total	25,788,100	24,826,426	23,733,684	-1,092,742
Noncommercial forest land:				
Productive-reserved	35,400	383,679	490,593	+106,914
Unproductive	25,900	30,075	18,161	-11,914
Total	61,300	413,754	508,754	+95,000
Nonforest land:				
Cropland	6,943,500	6,276,534	6,773,563	+497,029
Pasture and range	2,522,500	2,825,525	2,505,404	-320,121
Other	1,811,400	2,668,710	3,315,058	+646,348
Total	11,277,400	11,770,769	12,594,025	+823,256
All land^b	37,126,800	37,010,949	36,836,463	-174,486

^aThese figures differ slightly from previously reported figures because of revisions in the estimates of land area.

^bExcludes all water areas.

Table 41.--Volume of sawtimber, growing stock, and all live timber on commercial forest land, by species group, survey completion date, and diameter class, Georgia

Species group and year	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 thousand board feet)										
Softwood										
1961	--	--	9,128,464	9,646,568	6,865,767	3,977,546	2,202,748	1,197,710	1,258,279	
1972	--	--	10,295,932	11,816,320	9,986,873	6,447,297	3,554,456	1,806,910	2,074,516	
1982	--	--	11,218,652	12,557,664	10,747,355	7,514,782	4,693,369	2,573,725	2,953,202	
Hardwood										
1961	--	--	--	5,239,651	5,226,835	3,693,451	3,031,185	2,166,172	4,012,774	
1972	--	--	--	6,329,286	6,497,549	5,150,967	3,769,794	2,579,013	5,534,180	
1982	--	--	--	7,356,685	7,714,057	6,530,094	5,008,829	3,286,872	7,086,794	
GROWING STOCK (in thousand cubic feet)										
Softwood										
1961	11,334,079	1,615,940	2,519,063	2,156,552	1,353,037	720,895	374,776	195,548	194,930	
1972	14,986,701	2,293,358	2,849,339	2,647,524	1,971,016	1,169,416	604,741	295,314	321,349	
1982	15,882,373	1,936,705	3,105,289	2,815,716	2,122,314	1,363,660	798,563	420,809	457,554	
Hardwood										
1961	9,264,089	1,021,190	1,504,614	1,547,305	1,294,327	816,755	619,610	417,132	701,001	
1972	11,689,280	1,282,828	1,879,801	1,869,016	1,610,033	1,139,706	771,812	497,841	966,741	
1982	13,689,823	1,395,971	2,061,510	2,172,550	1,910,780	1,445,642	1,023,561	634,086	1,238,230	
ALL LIVE TIMBER ^b (in thousand cubic feet)										
Softwood										
1961	11,392,460	1,632,035	2,531,206	2,163,648	1,356,571	722,888	375,551	196,300	200,119	
1972	15,064,489	2,315,836	2,863,752	2,655,875	1,976,281	1,173,021	606,299	296,134	328,273	
1982	15,964,121	1,954,587	3,120,861	2,824,811	2,128,334	1,368,070	800,597	422,032	467,978	
Hardwood										
1961	10,378,189	1,214,061	1,683,560	1,672,881	1,394,243	886,022	674,156	464,314	826,361	
1972	13,155,879	1,608,936	2,098,830	2,016,510	1,728,855	1,231,849	838,505	554,773	1,140,919	
1982	15,386,623	1,755,690	2,302,911	2,345,613	2,050,256	1,559,687	1,110,080	704,955	1,461,887	

^aTo provide a basis for valid comparisons, adjustments have been made to allow for differences in volume tables and sawtimber specifications used in previous surveys.

^bMerchantable volume.

Table 42.--Merchantable volume of all live timber, by species group and Survey Unit, Georgia, 1961, 1972, and 1982

Species group and Survey Unit	1961	1972	Change 1961-1972	1982	Change 1972-1982
	<u>Thousand cubic feet</u>	<u>Thousand cubic feet</u>	<u>Percent</u>	<u>Thousand cubic feet</u>	<u>Percent</u>
Softwood:					
Southeast	4,425,450	4,679,945	+5.8	5,133,595	+9.7
Southwest	1,365,748	1,866,984	+36.7	2,144,432	+14.9
Central	3,224,685	4,413,632	+36.9	4,378,335	-.8
North Central	1,415,617	2,501,512	+76.7	2,538,097	+1.5
North	960,960	1,602,416	+66.8	1,769,662	+10.4
All units	11,392,460	15,064,489	+32.2	15,964,121	+6.0
Hardwood:					
Southeast	2,785,631	3,236,630	+16.2	3,821,551	+18.1
Southwest	1,138,714	1,274,113	+11.9	1,526,465	+19.8
Central	3,035,575	4,030,898	+32.8	4,634,240	+15.0
North Central	1,570,477	2,187,648	+39.3	2,650,465	+21.2
North	1,847,792	2,426,590	+31.3	2,753,902	+13.5
All units	10,378,189	13,155,879	+26.8	15,386,623	+17.0

Table 43.--Land area and total forest, by county, Georgia, 1982

County	: All lands :			: Total forest ^b		
	Acres	Acres	Percent	Acres	Acres	Percent
Appling	328,320	220,632	67.2	179,688	79,078	73.5
Atkinson	203,520	155,030	76.2	133,702	116,776	87.3
Bacon	187,520	118,587	63.2	375,841	191,911	51.1
Baker	227,200	112,966	49.7	171,802	67,639	39.4
Baldwin	162,944	117,799	72.3	318,720	193,151	60.6
Banks	147,776	103,526	70.1	252,800	87,727	34.7
Barrow	109,126	54,411	49.9	207,616	88,018	42.4
Bartow	295,296	180,521	61.1	129,280	95,679	74.0
Ben Hill	163,200	95,278	58.4	335,360	153,618	45.8
Berrien	299,520	181,290	60.5	272,000	257,509	94.7
Bibb	160,813	86,891	54.0	307,200	240,622	78.3
Bleckley	140,160	61,067	43.6	228,800	156,636	68.5
Brantley	286,080	255,092	89.2	439,040	285,041	64.9
Brooks	314,494	142,780	45.4	119,040	70,827	59.5
Bryan	283,520	236,904	83.6	252,096	225,036	89.3
Bulloch	437,760	227,709	52.0	127,040	73,865	58.1
Burke	531,648	281,701	53.0	328,006	208,166	63.5
Butts	118,528	82,016	69.2	142,317	83,381	58.6
Calhoun	184,832	91,519	49.5	170,323	92,139	54.1
Camden	417,920	312,999	74.9	339,200	170,528	50.3
Candler	160,000	81,902	51.2	278,189	249,841	89.8
Carroll	315,603	189,722	60.1	91,520	64,365	70.3
Catoosa	106,880	53,021	49.6	269,610	157,021	58.2
Charlton	509,520	488,886	96.0	228,992	129,681	56.6
Chatham	284,800	105,314	37.0	298,240	156,537	52.5
Chattoahoochee	161,222	134,768	83.6	247,232	197,155	79.7
Chattooga	202,880	149,157	73.5	278,778	155,019	55.6
Cherokee	267,219	207,548	77.7	180,672	129,059	71.4
Clarke	80,000	42,686	53.4	241,600	151,111	62.5
Clay	130,304	78,361	60.1	304,576	269,657	88.5
Clayton	94,810	46,309	48.8	182,099	137,513	75.5
Clinch	509,440	484,787	95.2	297,382	247,564	83.2
Cobb	221,696	105,362	47.5	147,712	63,148	42.8
Coffee	391,680	230,514	58.9	187,277	150,603	80.4
Colquitt	360,320	135,885	37.7	211,526	121,180	57.3
Columbia	185,856	139,829	75.2	242,816	120,568	49.7
Cook	149,120	70,083	47.0	238,080	107,357	45.1
Coweta	283,072	199,020	70.3	215,680	119,467	55.4
Crawford	201,600	160,022	79.4	238,464	188,203	78.9
Crisp	188,409	73,317	38.9	211,840	147,124	69.5
Dade				179,520	79,078	73.5
Dawson				133,702	116,776	87.3
Decatur				375,841	191,911	51.1
De Kalb				171,802	67,639	39.4
Dodge				318,720	193,151	60.6
Dooley				252,800	87,727	34.7
Dougherty				207,616	88,018	42.4
Douglas				129,280	95,679	74.0
Early				335,360	153,618	45.8
Echols				272,000	257,509	94.7
Effingham				307,200	240,622	78.3
Elbert				228,800	156,636	68.5
Emanuel				439,040	285,041	64.9
Evans				119,040	70,827	59.5
Fannin				252,096	225,036	89.3
Fayette				127,040	73,865	58.1
Floyd				328,006	208,166	63.5
Forsyth				142,317	83,381	58.6
Franklin				170,323	92,139	54.1
Fulton				339,200	170,528	50.3
Gilmer				278,189	249,841	89.8
Glascok				91,520	64,365	70.3
Glynn				269,610	157,021	58.2
Gordon				228,992	129,681	56.6
Grady				298,240	156,537	52.5
Greene				247,232	197,155	79.7
Gwinnett				278,778	155,019	55.6
Habersham				180,672	129,059	71.4
Hall				241,600	151,111	62.5
Hancock				304,576	269,657	88.5
Haralson				182,099	137,513	75.5
Harris				297,382	247,564	83.2
Hart				147,712	63,148	42.8
Heard				187,277	150,603	80.4
Henry				211,526	121,180	57.3
Houston				242,816	120,568	49.7
Irwin				238,080	107,357	45.1
Jackson				215,680	119,467	55.4
Jasper				238,464	188,203	78.9
Jeff Davis				211,840	147,124	69.5

Continued

Table 43.--Land area and total forest, by county, Georgia, 1982--Continued

County	: All land ^a :		: Total forest ^b		County	: All land ^a :		: Total forest ^b	
	Acres	Percent	Acres	Percent		Acres	Percent	Acres	Percent
Jefferson	339,200	55.3	187,730	55.3	Richmond	206,912	117,350	56.7	
Jenkins	224,640	58.1	130,457	58.1	Rockdale	81,862	38,918	47.5	
Johnson	200,320	54.5	109,097	54.5	Schley	103,680	70,320	67.8	
Jones	257,216	83.7	215,326	83.7	Scriven	416,640	239,148	57.4	
Lamar	115,584	68.0	78,634	68.0	Seminole	165,440	51,298	31.0	
Lanier	116,079	75.2	87,323	75.2	Spalding	128,314	68,409	53.3	
Laurens	518,400	60.4	313,161	60.4	Stephens	110,912	85,470	77.1	
Lee	226,880	39.4	89,347	39.4	Stewart	289,280	248,407	85.9	
Liberty	328,960	77.7	255,669	77.7	Sumter	312,576	117,675	37.6	
Lincoln	123,200	84.2	103,690	84.2	Talbot	249,280	225,230	90.4	
Long	257,280	91.4	235,275	91.4	Taliaferro	124,800	108,098	86.6	
Lowndes	325,120	65.0	211,169	65.0	Tattnall	313,600	185,675	59.2	
Lumpkin	186,547	88.1	164,345	88.1	Taylor	257,734	185,480	72.0	
Macon	257,632	44.9	115,706	44.9	Telfair	281,600	197,159	70.0	
Madison	179,546	56.1	100,726	56.1	Terrell	210,240	91,348	43.4	
Marion	233,600	79.8	186,332	79.8	Thomas	346,240	179,048	51.7	
McDuffie	161,792	70.2	113,615	70.2	Tift	170,240	58,464	34.3	
McIntosh	272,640	74.9	204,204	74.9	Toombs	235,520	118,673	50.4	
Meriwether	319,066	72.0	229,739	72.0	Towns	106,048	96,526	91.0	
Miller	183,680	32.7	60,038	32.7	Treutlen	124,160	83,840	67.5	
Mitchell	326,400	31.2	101,738	31.2	Troup	266,170	192,707	72.4	
Monroe	254,976	79.9	203,744	79.9	Turner	187,520	82,436	44.0	
Montgomery	151,040	65.8	99,387	65.8	Twiggs	233,088	188,194	80.7	
Morgan	224,922	60.1	135,286	60.1	Union	197,696	171,435	86.7	
Murray	217,389	72.1	156,845	72.1	Upson	213,632	158,030	74.0	
Muscogee	140,109	68.7	96,286	68.7	Walker	284,544	180,538	63.4	
Newton	173,632	62.5	108,559	62.5	Walton	211,200	120,973	57.3	
Oconee	118,982	58.1	69,097	58.1	Ware	583,680	510,174	87.4	
Oglethorpe	278,336	79.3	220,825	79.3	Warren	181,427	125,299	69.1	
Paulding	203,270	78.4	159,350	78.4	Washington	430,822	292,886	68.0	
Peach	96,640	40.7	39,376	40.7	Wayne	412,800	339,280	82.2	
Pickens	143,789	84.7	121,845	84.7	Webster	124,717	78,727	63.1	
Pierce	218,880	64.9	142,128	64.9	Wheeler	195,840	134,027	68.4	
Pike	147,200	56.1	82,514	56.1	White	155,392	124,278	80.0	
Polk	199,642	70.6	141,017	70.6	Whitfield	179,770	118,610	66.0	
Pulaski	162,112	44.4	72,030	44.4	Wilcox	245,120	146,711	59.9	
Putnam	212,800	84.0	178,784	84.0	Wilkes	299,712	232,534	77.6	
Quitman	99,776	85.1	84,886	85.1	Wilkinson	292,634	241,625	82.6	
Rabun	235,712	91.3	215,208	91.3	Worth	370,560	156,223	42.2	
Randolph	278,726	59.6	165,996	59.6	Total	37,167,713	24,242,438	65.2	

^a Excludes inland water.

^b

Table 44.--Area of commercial forest land, by county and ownership class, Georgia, 1982

County	All : ownerships :				National : Forest :				Other : public :				Forest : industry :				Other : private :			
	Acres	Acres	Acres	Acres	Acres	Acres	Acres	Acres	Acres	Acres	Acres	Acres	Acres	Acres	Acres	Acres	Acres	Acres		
Appling	220,632	--	905	75,376	144,351	--	76,383	--	47	11,822	64,514	--	47	11,822	64,514					
Atkinson	155,030	--	--	61,726	93,304	--	116,385	6,546	15,874	13,632	80,333	--	15,874	13,632	80,333					
Bacon	118,587	--	2,367	32,487	83,733	--	191,911	--	7,664	33,921	150,326	--	7,664	33,921	150,326					
Baker	112,966	--	5	18,836	94,125	--	65,834	--	1,348	--	64,486	--	1,348	--	64,486					
Baldwin	117,799	--	5,278	17,041	95,480	--	193,151	--	--	28,996	164,155	--	--	28,996	164,155					
Banks	103,526	656	413	10,153	92,304	--	87,702	4,106	26	11,860	71,710	--	26	11,860	71,710					
Barrow	53,029	--	100	258	52,671	--	87,878	--	1,671	15,326	70,881	--	1,671	15,326	70,881					
Bartow	178,500	--	8,018	30,899	139,583	--	93,979	--	890	3,006	90,083	--	890	3,006	90,083					
Ben Hill	95,278	--	188	25,534	69,556	--	152,434	--	624	20,737	131,073	--	624	20,737	131,073					
Berrien	181,290	--	2,556	21,008	157,726	--	257,349	--	--	209,785	169,573	--	--	209,785	169,573					
Bibb	86,441	--	--	5,808	80,633	--	240,622	--	6,226	64,823	169,573	--	6,226	64,823	169,573					
Bleckley	61,067	--	110	21,758	39,199	--	155,962	--	13,672	48,433	93,857	--	13,672	48,433	93,857					
Brantley	255,092	--	6,219	160,657	88,216	--	284,136	--	482	71,963	211,691	--	482	71,963	211,691					
Brooks	142,780	--	304	21,497	120,979	--	70,827	--	16,036	6,458	48,333	--	16,036	6,458	48,333					
Bryan	236,680	--	96,680	52,838	87,167	--	195,772	73,635	49	461	121,627	--	49	461	121,627					
Bulloch	227,709	--	393	31,241	196,075	--	208,131	8,264	1,109	21,679	177,079	--	1,109	21,679	177,079					
Burke	281,701	--	154	88,484	193,063	--	83,288	--	5,539	661	77,088	--	5,539	661	77,088					
Butts	81,625	--	530	15,190	65,905	--	91,424	--	989	5,595	84,840	--	989	5,595	84,840					
Calhoun	91,519	--	3	9,775	81,741	--	168,598	--	1,585	3,025	163,988	--	1,585	3,025	163,988					
Camden	298,931	--	6,657	146,059	146,215	--	248,891	52,441	3,822	16,729	175,899	--	3,822	16,729	175,899					
Candler	81,902	--	125	9,823	71,954	--	64,365	--	--	15,663	48,702	--	--	15,663	48,702					
Carroll	189,601	--	920	28,633	160,048	--	153,208	--	3,894	112,152	37,162	--	3,894	112,152	37,162					
Catoosa	49,648	--	1,716	3,591	44,341	--	129,656	5,660	141	23,848	100,007	--	141	23,848	100,007					
Charlton	318,444	--	6,635	196,427	115,382	--	153,624	--	170	10,629	142,825	--	170	10,629	142,825					
Chatham	100,946	--	14,395	34,942	51,609	--	197,142	20,110	770	61,163	115,099	--	770	61,163	115,099					
Chattahoochee	134,768	--	84,436	19,093	31,239	--	154,589	--	1,659	3,828	149,102	--	1,659	3,828	149,102					
Chattooga	148,967	15,489	--	17,020	116,458	--	129,059	39,268	167	3,606	86,018	--	167	3,606	86,018					
Cherokee	207,548	--	41,038	41,038	156,867	--	151,111	--	11,136	8,099	131,876	--	11,136	8,099	131,876					
Clarke	42,686	--	9,643	840	39,603	--	269,657	--	280	116,460	152,917	--	280	116,460	152,917					
Clay	78,016	--	2,243	15,537	60,148	--	63,010	--	90	53,132	189,405	--	90	53,132	189,405					
Clayton	46,309	--	2,331	42,252	97,108	--	242,627	--	6,479	3,763	52,768	--	6,479	3,763	52,768					
Clinch	464,955	--	2,520	365,327	98,538	--	150,603	--	5,647	55,150	89,806	--	5,647	55,150	89,806					
Cobb	101,689	--	3,012	139	206,276	--	121,180	--	365	4,093	116,722	--	365	4,093	116,722					
Coffee	229,038	--	277	22,485	131,524	--	119,871	--	2,540	50,869	66,462	--	2,540	50,869	66,462					
Colquitt	135,152	--	546	3,082	100,480	--	107,357	--	59	10,051	97,247	--	59	10,051	97,247					
Columbia	137,049	--	11,297	25,272	62,940	--	119,467	--	649	3,298	115,520	--	649	3,298	115,520					
Cook	69,612	--	327	6,345	170,850	--	188,203	--	6,122	35,032	123,280	--	6,122	35,032	123,280					
Coweta	199,020	--	2,915	25,255	90,471	--	147,124	23,769	9	42,843	104,272	--	9	42,843	104,272					
Crawford	160,022	--	33	69,518	90,471	--	--	--	--	--	--	--	--	--	--	--	--			
Crisp	72,117	--	258	4,813	67,046	--	--	--	--	--	--	--	--	--	--	--	--			

Continued

Table 44.--Area of commercial forest land, by county and ownership class, Georgia, 1982--Continued

County	All : ownerships :			National : Forest :			Other : public :			Forest : industry :			Other : private :		
	Acres	Acres	Acres	Acres	Acres	Acres	Acres	Acres	Acres	Acres	Acres	Acres	Acres	Acres	Acres
Jefferson	187,730	4,311	39,903	143,516	117,350	40,411	19,010	57,929							
Jenkins	129,568	99	48,648	80,821	38,501	424	1,048	37,029							
Johnson	109,097	52	19,185	89,860	70,320	15	15,729	54,576							
Jones	215,324	20,947	53,630	113,810	239,148	1,374	58,411	179,363							
Lamar	78,634	427	12,735	65,472	50,967	3,561	3,327	44,079							
Lanier	87,323	6,530	20,306	60,487	68,409	555	1,665	66,189							
Laurens	313,161	1,091	69,782	242,288	85,254	1,509	3,185	60,037							
Lee	89,022	40	8,202	80,780	247,798	480	153,103	94,215							
Liberty	255,627	103,485	75,144	76,998	117,675	350	22,275	95,050							
Lincoln	103,263	20,721	19,379	63,163	225,230	3,620	75,518	146,092							
Long	234,556	26,406	122,330	85,820	106,959	88	44,592	62,279							
Lowndes	211,169	3,195	67,016	140,958	185,510	6,711	32,677	146,122							
Lumpkin	163,275	669	15,041	90,313	185,480	180	46,923	138,377							
Macon	115,487	747	26,832	87,908	197,059	6	71,250	125,803							
Madison	100,685	75	19,699	80,911	91,348	--	5,490	85,858							
Marion	186,332	490	83,546	102,296	179,048	547	5,736	172,765							
McDuffie	113,555	490	18,396	80,519	58,464	873	--	57,591							
McIntosh	190,233	8,782	123,142	58,309	118,673	537	32,681	85,455							
Meriwether	229,739	4,944	64,354	160,441	95,822	20	217	45,300							
Miller	60,038	32	11,525	48,481	83,840	50	11,548	72,242							
Mitchell	101,738	120	4,319	97,299	192,707	50	23,885	156,309							
Monroe	203,356	180	59,236	143,940	82,436	81	12,316	70,039							
Montgomery	99,387	60	15,418	83,909	188,194	--	61,794	126,400							
Morgan	129,917	251	21,891	107,494	168,870	344	3,398	76,061							
Murray	148,803	45,838	22,565	79,168	158,030	549	48,464	109,017							
Muscogee	96,228	41,028	993	54,207	179,273	20,814	3,432	144,513							
Newton	108,559	966	8,581	99,012	120,798	444	7,567	112,787							
Oconee	69,097	160	4,418	64,109	340,739	34,883	188,258	117,598							
Oglethorpe	220,615	340	96,291	120,213	125,299	140	49,471	75,688							
Paulding	158,618	10,055	33,105	115,458	292,360	140	69,264	222,956							
Peach	39,376	262	2,634	36,480	338,827	373	187,171	151,283							
Pickens	121,845	87	20,137	101,621	78,727	--	37,284	41,443							
Pierce	142,128	75	32,500	109,553	132,995	84	28,756	104,155							
Pike	82,514	262	10,405	71,847	118,988	69	2,836	75,899							
Polk	141,017	425	32,175	108,417	118,610	438	16,366	91,731							
Pulaski	71,990	62	9,692	62,236	146,691	83	24,732	121,876							
Putnam	178,396	31,201	49,283	85,674	232,534	6,794	84,848	140,892							
Quitman	84,886	766	28,417	55,703	241,625	370	59,606	181,649							
Rabun	207,055	124,553	--	82,412	156,223	115	29,940	126,168							
Randolph	165,996	--	54,254	111,742											
Total	23,733,684	764,895	818,867	5,936,248	16,213,674										

^aIncludes 972,510 acres of other private land under long-term lease.

Table 45.—Area of commercial forest land, by county and broad management class, Georgia, 1982

County	Acres				County	Acres			
	All classes	Pine plantation	Natural pine	Oak-pine hardwood		Upland hardwood	Lowland hardwood	Upland hardwood	Lowland hardwood
Appling	220,632	36,810	103,923	12,395	11,514	55,990	11,514	11,514	55,990
Atkinson	155,030	66,876	40,374	8,748	11,216	27,816	11,216	11,216	27,816
Bacon	118,587	24,720	55,785	11,531	10,804	15,747	10,804	10,804	15,747
Baker	112,966	17,961	21,515	16,140	37,197	20,153	37,197	37,197	20,153
Baldwin	117,799	14,528	61,258	11,007	19,999	11,007	19,999	19,999	11,007
Banks	103,526	—	37,181	25,556	32,762	8,027	32,762	32,762	8,027
Barrow	53,029	258	24,886	12,393	12,394	3,098	12,394	12,394	3,098
Bartow	178,500	13,769	71,115	38,437	55,179	—	55,179	55,179	—
Ben Hill	95,278	19,358	48,148	11,532	5,536	10,704	5,536	5,536	10,704
Berrien	181,290	15,674	71,181	27,145	14,339	52,951	14,339	14,339	52,951
Bibb	86,441	—	38,723	11,519	21,939	14,260	21,939	21,939	14,260
Bleckley	61,067	13,320	10,760	3,563	15,156	18,268	15,156	15,156	18,268
Brantley	255,092	97,651	49,555	35,130	8,714	64,042	8,714	8,714	64,042
Brooks	142,780	15,398	31,141	11,255	33,955	51,031	33,955	33,955	51,031
Bryan	236,685	20,228	115,466	35,451	8,835	56,705	8,835	8,835	56,705
Bulloch	227,709	11,199	64,781	47,170	35,076	69,483	35,076	35,076	69,483
Burke	281,701	57,637	47,493	32,934	84,776	58,861	32,934	32,934	84,776
Butts	81,625	17,689	23,985	15,475	23,966	510	23,966	23,966	510
Calhoun	91,519	8,561	10,662	—	46,451	25,845	46,451	46,451	25,845
Camden	298,931	105,640	61,849	32,238	24,084	75,120	24,084	24,084	75,120
Candler	81,902	12,393	12,973	12,848	20,558	23,130	20,558	20,558	23,130
Carrroll	189,601	3,545	64,894	30,649	80,248	10,265	30,649	30,649	10,265
Catoosa	49,648	3,591	—	7,912	31,811	6,334	31,811	31,811	6,334
Charlton	318,444	144,542	103,727	15,075	12,474	42,626	12,474	12,474	42,626
Chatham	100,946	19,133	23,300	11,299	31,539	15,675	31,539	31,539	15,675
Chattahoochee	134,768	4,067	50,008	16,340	53,458	10,895	53,458	53,458	10,895
Chattoga	148,967	2,836	31,762	48,669	65,700	—	65,700	65,700	—
Cherokee	207,548	18,240	70,081	26,970	86,655	5,602	26,970	26,970	86,655
Clarke	42,686	5,241	17,601	8,801	6,643	4,400	6,643	6,643	4,400
Clay	78,016	16,187	19,743	7,839	24,221	10,026	24,221	24,221	10,026
Clayton	46,309	—	21,589	6,036	15,666	3,018	15,666	15,666	3,018
Clinch	464,955	196,928	122,214	20,528	—	125,285	—	—	125,285
Cobb	101,689	—	72,991	12,714	12,805	3,179	12,805	12,805	3,179
Coffee	229,038	43,604	90,164	34,467	14,525	46,278	14,525	14,525	46,278
Colquitt	135,152	6,576	69,389	16,441	9,864	32,882	9,864	9,864	32,882
Columbia	137,049	11,101	61,770	17,552	22,418	24,208	22,418	22,418	24,208
Cook	69,612	5,994	16,419	8,209	2,737	36,253	2,737	2,737	36,253
Coweta	199,020	—	65,676	55,072	60,838	17,434	60,838	60,838	17,434
Crawford	160,022	48,391	41,788	33,239	31,070	5,534	31,070	31,070	5,534
Crisp	72,117	2,682	28,949	8,046	8,046	24,394	8,046	8,046	24,394
Dade	76,383	—	11,730	5,865	—	—	—	—	—
Dawson	116,385	—	30,173	23,928	—	—	—	—	—
Decatur	191,911	20,719	80,648	17,859	17,859	30,592	17,859	17,859	30,592
De Kalb	65,834	—	34,936	8,410	8,410	2,803	8,410	8,410	2,803
Dodge	193,151	48,253	64,268	21,888	25,963	32,779	25,963	25,963	32,779
Dooly	87,702	2,053	29,145	11,502	21,825	23,177	11,502	11,502	23,177
Dougherty	93,979	4,121	20,019	15,566	50,047	4,226	15,566	15,566	50,047
Douglas	152,434	26,972	31,588	8,547	40,004	45,323	8,547	40,004	45,323
Early	257,349	118,571	46,307	12,410	8,398	71,663	12,410	8,398	71,663
Effingham	240,622	28,941	111,586	16,055	39,074	44,966	16,055	39,074	44,966
Elbert	155,962	11,165	62,452	33,650	44,087	4,608	33,650	44,087	4,608
Emmanuel	284,136	61,884	107,726	24,116	29,507	60,903	24,116	29,507	60,903
Evans	70,827	2,153	27,829	3,199	14,726	22,920	3,199	14,726	22,920
Fannin	195,772	6,401	33,010	30,210	126,151	—	30,210	126,151	—
Fayette	73,865	974	26,032	10,413	26,032	10,414	10,413	26,032	10,414
Floyd	208,131	4,286	92,750	16,134	84,544	10,417	16,134	84,544	10,417
Forsyth	83,288	—	35,531	7,377	40,380	—	7,377	40,380	—
Franklin	91,424	3,646	33,764	7,095	39,849	7,070	33,764	39,849	7,070
Fulton	168,598	3,417	85,760	13,770	55,402	10,249	13,770	55,402	10,249
Gilmer	248,891	—	31,462	55,299	156,957	5,173	55,299	156,957	5,173
Glascok	64,365	7,494	11,239	16,134	17,285	12,213	11,239	17,285	12,213
Glynn	153,208	57,123	27,697	11,416	19,916	37,056	11,416	19,916	37,056
Gordon	129,656	8,387	42,767	37,209	32,201	9,092	37,209	32,201	9,092
Grady	153,624	4,805	44,139	23,359	35,707	45,614	44,139	35,707	45,614
Greene	197,142	27,089	95,326	27,028	40,505	7,194	27,028	40,505	7,194
Gwinnett	154,589	1,914	81,412	24,271	43,524	3,468	24,271	43,524	3,468
Habersham	129,059	3,606	46,638	27,542	51,273	—	46,638	27,542	51,273
Hall	151,111	—	56,416	19,761	73,351	1,583	56,416	19,761	73,351
Hancock	269,657	54,841	109,582	28,150	66,658	10,426	109,582	28,150	66,658
Haralson	137,513	18,280	31,661	24,584	52,452	10,536	31,661	24,584	52,452
Harris	242,627	16,365	111,775	61,347	41,739	11,401	111,775	41,739	11,401
Hart	63,010	1,882	20,095	—	41,033	—	20,095	—	41,033
Hartwell	150,603	32,818	50,283	11,598	52,454	3,454	50,283	11,598	52,454
Henry	121,180	3,234	54,853	25,237	34,702	3,154	54,853	25,237	34,702
Houston	119,871	9,537	17,847	7,333	53,280	31,874	17,847	7,333	53,280
Irwin	107,357	5,254	49,635	16,669	11,115	24,684	49,635	11,115	24,684
Jackson	119,467	3,610	67,625	7,220	33,792	7,220	67,625	7,220	33,792
Jasper	188,203	12,174	91,450	27,953	56,596	30	91,450	27,953	56,596
Jeff Davis	147,124	18,986	65,316	29,365	3,295	30,162	65,316	29,365	3,295

Continued

Table 45.—Area of commercial forest land, by county and broad management class, Georgia, 1982—Continued

County	Acres				County	Acres						
	All classes	Pine plantation	Natural pine	Oak-pine		Upland hardwood	Lowland hardwood	Oak-pine	Upland hardwood	Lowland hardwood		
Jefferson	187,730	25,552	39,726	17,939	53,964	50,549	117,350	8,657	36,769	9,441	33,230	29,253
Jenkins	129,568	20,835	34,301	14,992	21,189	38,251	38,501	—	18,907	7,406	12,188	—
Johnson	109,097	19,132	27,231	24,524	16,408	21,802	70,320	4,993	13,644	13,644	27,854	10,785
Jones	215,324	20,091	126,310	27,064	31,082	10,777	239,148	28,134	61,748	14,542	58,331	76,393
Lamar	78,634	3,445	37,284	—	20,675	17,230	50,967	7,346	7,347	10,673	11,020	14,581
Lanier	87,323	22,252	21,869	4,840	4,838	33,524	68,409	—	37,482	13,276	8,826	8,825
Laurens	313,161	65,147	89,546	32,421	57,069	68,978	85,254	3,185	30,788	16,388	34,893	—
Lee	89,022	15,792	12,321	7,024	39,836	14,049	247,798	74,536	64,886	25,657	72,690	10,029
Liberty	255,627	51,902	96,319	21,768	46,462	39,176	117,675	37,325	17,921	10,760	18,996	32,673
Lincoln	103,263	13,827	43,676	22,073	23,687	—	225,230	20,075	101,840	45,960	42,070	15,285
Long	234,556	53,178	52,588	35,415	21,551	71,824	106,959	11,367	50,321	31,117	14,154	—
Lowndes	211,169	42,966	34,736	28,561	36,951	67,955	185,510	32,954	62,612	16,614	26,495	46,835
Lumpkin	163,275	3,008	57,542	27,216	75,509	—	185,480	53,525	27,986	16,014	65,071	22,884
Macon	115,487	5,289	10,340	15,630	49,514	34,714	197,059	53,155	66,027	7,079	7,828	62,970
Madison	100,685	10,676	33,409	19,339	33,409	3,852	91,348	5,095	17,889	3,578	14,309	50,477
Marion	186,332	20,321	47,890	8,379	83,852	25,890	179,048	6,171	66,547	33,936	36,205	36,189
McDuffie	113,555	15,455	55,974	8,947	33,409	3,852	58,464	8,227	22,813	8,228	2,743	16,453
McIntosh	190,233	45,448	44,232	25,786	13,420	40,478	118,673	25,763	24,335	12,638	24,864	31,073
Meriwether	229,739	41,611	68,058	9,026	75,593	35,451	95,822	217	15,535	21,177	58,893	—
Miller	60,038	2,694	13,196	10,773	15,922	17,453	83,840	23,228	36,326	12,040	3,010	9,236
Mitchell	101,738	15,547	45,026	11,227	18,712	11,226	192,707	9,606	99,656	16,926	58,161	8,358
Monroe	203,356	16,289	86,122	28,788	61,216	10,941	82,436	10,687	40,103	10,005	6,672	14,969
Montgomery	99,387	13,274	39,107	12,910	17,617	16,479	188,194	34,009	43,167	17,555	68,197	25,266
Morgan	129,917	3,839	53,775	30,523	37,820	3,960	168,870	4,453	53,252	8,907	102,258	—
Murray	148,803	12,290	55,622	15,257	62,209	3,425	158,030	14,955	52,175	11,688	64,921	14,291
Muscogee	96,228	4,170	48,240	16,211	16,772	10,835	179,273	7,811	40,150	28,835	102,477	—
Newton	108,559	3,667	49,727	10,194	37,637	7,334	120,798	17,821	41,455	17,089	27,344	17,089
Oconee	69,097	4,418	24,434	20,211	12,020	8,014	340,739	128,738	120,759	16,150	2,546	72,546
Oglethorpe	220,615	42,533	67,706	11,812	64,721	33,843	125,299	21,284	44,624	14,553	41,797	3,041
Paulding	158,618	1,175	84,612	14,432	58,399	—	292,360	71,106	72,273	41,660	81,178	26,143
Peach	39,376	194	16,282	—	18,846	4,054	338,827	128,911	73,309	39,251	14,272	83,084
Pickens	121,845	85	47,362	5,081	69,317	—	78,727	19,905	13,814	3,981	32,138	8,889
Pierce	142,128	21,431	55,235	15,399	12,449	37,614	132,995	35,003	34,719	21,399	13,957	27,917
Pike	82,514	12,050	18,194	6,248	33,847	12,175	118,988	—	49,817	15,980	49,197	3,994
Polk	141,017	24,685	3,111	14,456	50,351	—	118,610	14,940	39,932	15,892	41,731	6,115
Pulaski	71,990	19,028	51,525	12,448	15,602	—	146,691	46,578	26,467	17,632	8,917	47,097
Putnam	178,396	35,162	67,727	21,563	53,944	—	232,534	51,757	93,521	46,965	25,252	15,039
Quitman	84,886	4,226	44,604	14,049	10,071	11,936	241,625	36,096	58,102	31,812	61,167	54,448
Rabun	207,055	4,338	67,817	32,939	101,961	—	156,223	30,457	74,010	10,514	12,281	28,961
Randolph	165,996	24,879	44,207	14,899	46,754	—	23,733,684	3,592,155	7,846,764	2,959,550	5,805,257	3,529,958
Total												

Table 46.--Merchantable volume of all live timber 5.0 inches d.b.h. and larger on commercial forest land, by county and species group, Georgia, 1982

County	All species				Yellow pine				Other softwood				Soft hardwood				Hard hardwood																														
	269,956	147,767	130,768	159,272	165,060	88,172	79,903	66,912	89,139	56,488	37,801	132,629	80,905	161,375	62,148	7,484	234,051	201,020	371,089	355,987	382,161	110,234	136,173	391,290	118,549	211,094	63,278	299,083	192,961	193,951	142,349	318,300	57,987	69,281	66,728	432,966	207,917	239,284	191,957	243,145	108,358	232,258	110,952	132,300			
	Thousand cubic feet																																														
	18,947	9,730	9,233	11,174	18,947	9,730	9,233	11,174	18,947	9,730	9,233	11,174	18,947	9,730	9,233	11,174	18,947	9,730	9,233	11,174	18,947	9,730	9,233	11,174	18,947	9,730	9,233	11,174	18,947	9,730	9,233	11,174	18,947	9,730	9,233	11,174	18,947	9,730	9,233	11,174	18,947	9,730	9,233	11,174			
Appling	23,585	5,369	9,056	71,641	62,364	44,496	32,576	9,545	17,314	51,133	16,793	15,235	13,731	5,888	71,983	40,435	42,997	71,156	61,987	95,670	53,873	143,928	155,165	21,720	40,864	114,582	59,773	48,752	13,292	38,121	61,656	57,057	21,124	61,109	104,982	11,859	23,260	18,842	14,902	24,905	65,495	43,301	49,678	30,791	72,799	37,640	25,364
Atkinson	23,585	5,369	9,056	71,641	62,364	44,496	32,576	9,545	17,314	51,133	16,793	15,235	13,731	5,888	71,983	40,435	42,997	71,156	61,987	95,670	53,873	143,928	155,165	21,720	40,864	114,582	59,773	48,752	13,292	38,121	61,656	57,057	21,124	61,109	104,982	11,859	23,260	18,842	14,902	24,905	65,495	43,301	49,678	30,791	72,799	37,640	25,364
Bacon	23,585	5,369	9,056	71,641	62,364	44,496	32,576	9,545	17,314	51,133	16,793	15,235	13,731	5,888	71,983	40,435	42,997	71,156	61,987	95,670	53,873	143,928	155,165	21,720	40,864	114,582	59,773	48,752	13,292	38,121	61,656	57,057	21,124	61,109	104,982	11,859	23,260	18,842	14,902	24,905	65,495	43,301	49,678	30,791	72,799	37,640	25,364
Baker	23,585	5,369	9,056	71,641	62,364	44,496	32,576	9,545	17,314	51,133	16,793	15,235	13,731	5,888	71,983	40,435	42,997	71,156	61,987	95,670	53,873	143,928	155,165	21,720	40,864	114,582	59,773	48,752	13,292	38,121	61,656	57,057	21,124	61,109	104,982	11,859	23,260	18,842	14,902	24,905	65,495	43,301	49,678	30,791	72,799	37,640	25,364
Baldwin	23,585	5,369	9,056	71,641	62,364	44,496	32,576	9,545	17,314	51,133	16,793	15,235	13,731	5,888	71,983	40,435	42,997	71,156	61,987	95,670	53,873	143,928	155,165	21,720	40,864	114,582	59,773	48,752	13,292	38,121	61,656	57,057	21,124	61,109	104,982	11,859	23,260	18,842	14,902	24,905	65,495	43,301	49,678	30,791	72,799	37,640	25,364
Banks	23,585	5,369	9,056	71,641	62,364	44,496	32,576	9,545	17,314	51,133	16,793	15,235	13,731	5,888	71,983	40,435	42,997	71,156	61,987	95,670	53,873	143,928	155,165	21,720	40,864	114,582	59,773	48,752	13,292	38,121	61,656	57,057	21,124	61,109	104,982	11,859	23,260	18,842	14,902	24,905	65,495	43,301	49,678	30,791	72,799	37,640	25,364
Barrow	23,585	5,369	9,056	71,641	62,364	44,496	32,576	9,545	17,314	51,133	16,793	15,235	13,731	5,888	71,983	40,435	42,997	71,156	61,987	95,670	53,873	143,928	155,165	21,720	40,864	114,582	59,773	48,752	13,292	38,121	61,656	57,057	21,124	61,109	104,982	11,859	23,260	18,842	14,902	24,905	65,495	43,301	49,678	30,791	72,799	37,640	25,364
Bartow	23,585	5,369	9,056	71,641	62,364	44,496	32,576	9,545	17,314	51,133	16,793	15,235	13,731	5,888	71,983	40,435	42,997	71,156	61,987	95,670	53,873	143,928	155,165	21,720	40,864	114,582	59,773	48,752	13,292	38,121	61,656	57,057	21,124	61,109	104,982	11,859	23,260	18,842	14,902	24,905	65,495	43,301	49,678	30,791	72,799	37,640	25,364
Ben Hill	23,585	5,369	9,056	71,641	62,364	44,496	32,576	9,545	17,314	51,133	16,793	15,235	13,731	5,888	71,983	40,435	42,997	71,156	61,987	95,670	53,873	143,928	155,165	21,720	40,864	114,582	59,773	48,752	13,292	38,121	61,656	57,057	21,124	61,109	104,982	11,859	23,260	18,842	14,902	24,905	65,495	43,301	49,678	30,791	72,799	37,640	25,364
Berrien	23,585	5,369	9,056	71,641	62,364	44,496	32,576	9,545	17,314	51,133	16,793	15,235	13,731	5,888	71,983	40,435	42,997	71,156	61,987	95,670	53,873	143,928	155,165	21,720	40,864	114,582	59,773	48,752	13,292	38,121	61,656	57,057	21,124	61,109	104,982	11,859	23,260	18,842	14,902	24,905	65,495	43,301	49,678	30,791	72,799	37,640	25,364
Bibb	23,585	5,369	9,056	71,641	62,364	44,496	32,576	9,545	17,314	51,133	16,793	15,235	13,731	5,888	71,983	40,435	42,997	71,156	61,987	95,670	53,873	143,928	155,165	21,720	40,864	114,582	59,773	48,752	13,292	38,121	61,656	57,057	21,124	61,109	104,982	11,859	23,260	18,842	14,902	24,905	65,495	43,301	49,678	30,791	72,799	37,640	25,364
Bleckley	23,585	5,369	9,056	71,641	62,364	44,496	32,576	9,545	17,314	51,133	16,793	15,235	13,731	5,888	71,983	40,435	42,997	71,156	61,987	95,670	53,873	143,928	155,165	21,720	40,864	114,582	59,773	48,752	13,292	38,121	61,656	57,057	21,124	61,109	104,982	11,859	23,260	18,842	14,902	24,905	65,495	43,301	49,678	30,791	72,799	37,640	25,364
Brantley	23,585	5,369	9,056	71,641	62,364	44,496	32,576	9,545	17,314	51,133	16,793	15,235	13,731	5,888	71,983	40,435	42,997	71,156	61,987	95,670	53,873	143,928	155,165	21,720	40,864	114,582	59,773	48,752	13,292	38,121	61,656	57,057	21,124	61,109	104,982	11,859	23,260	18,842	14,902	24,905	65,495	43,301	49,678	30,791	72,799	37,640	25,364
Brooks	23,585	5,369	9,056	71,641	62,364	44,496	32,576	9,545	17,314	51,133	16,793	15,235	13,731	5,888	71,983	40,435	42,997	71,156	61,987	95,670	53,873	143,928	155,165	21,720	40,864	114,582	59,773	48,752	13,292	38,121	61,656	57,057	21,124	61,109	104,982	11,859	23,260	18,842	14,902	24,905	65,495	43,301	49,678	30,791	72,799	37,640	25,364
Bryan	23,585	5,369	9,056	71,641	62,364	44,496	32,576	9,545	17,314	51,133	16,793	15,235	13,731	5,888	71,983	40,435	42,997	71,156	61,987	95,670	53,873	143,928	155,165	21,720	40,864	114,582	59,773	48,752	13,292	38,121	61,656	57,057	21,124	61,109	104,982	11,859	23,260	18,842	14,902	24,905	65,495	43,301	49,678	30,791	72,799	37,640	25,364
Bulloch	23,585	5,369	9,056	71,641	62,364	44,496	32,576	9,545	17,314	51,133	16,793	15,235	13,731	5,888	71,983	40,435	42,997	71,156	61,987	95,670	53,873	143,928	155,165	21,720	40,864	114,582	59,773	48,752	13,292	38,121	61,656	57,057	21,124	61,109	104,982	11,859	23,260	18,842	14,902	24,905	65,495	43,301	49,678	30,791	72,799	37,640	25,364
Burke	23,585	5,369	9,056	71,641	62,364	44,496	32,576	9,545	17,314	51,133	16,793	15,235	13,731	5,888	71,983	40,435	42,997	71,156	61,987	95,670	53,873	143,928	155,165	21,720	40,864	114,582	59,773	48,752	13,292	38,121	61,656	57,057	21,124	61,109	104,982	11,859	23,260	18,842	14,902	24,905	65,495	43,301	49,678	30,791	72,799	37,640	25,364
Butts	23,585	5,369	9,056	71,641	62,364	44,496	32,576	9,545	17,314	51,133	16,793	15,235	13,731	5,888	71,983	40,435	42,997	71,156	61,987	95,670	53,873	143,928	155,165	21,720	40,864	114,582	59,773	48,752	13,292	38,121	61,656	57,057	21,124	61,109	104,982	11,859	23,260	18,842	14,902	24,905	65,495	43,301	49,678	30,791	72,799	37,640	25,364
Calhoun	23,585	5,369	9,056	71,641	62,364	44,496	32,576	9,545	17,314	51,133	16,793	15,235	13,731	5,888	71,983	40,435	42,997	71,156	61,987	95,670	53,873	143,928	155,165	21,720	40,864	114,582	59,773	48,752	13,292	38,121	61,656	57,057	21,124	61,109	104,982	11,859	23,260	18,842	14,902	24,905	65,495	43,301	49,678	30,791	72,799	37,640	25,364
Camden	23,585	5,369	9,056	71,641	62,364	44,496																																									

Table 47.--Volume of growing stock on commercial forest land, by county and species group, Georgia, 1982

County	All species				Yellow pine				Other softwood				Soft hardwood				Hard hardwood			
	Volume	Species	Volume	Species	Volume	Species	Volume	Species	Volume	Species	Volume	Species	Volume	Species	Volume	Species	Volume	Species		
	Thousand cubic feet																			
Appling	259,966		165,060		18,947		57,740		18,219		91,262		9,209		21,125		59,522			
Atkinson	135,961		88,172		9,092		35,469		3,228		151,077		62,214		19,596		68,116			
Bacon	117,976		79,559		9,233		24,260		4,924		238,796		152,944		41,960		37,904			
Baker	139,299		66,912		11,174		8,952		52,261		129,040		72,012		13,809		43,219			
Baldwin	138,651		88,867		303		33,034		16,447		246,807		156,872		58,556		28,070			
Banks	131,043		56,488		327		28,138		46,090		115,692		46,826		35,193		20,058			
Barrow	76,540		37,280		--		15,441		23,819		158,682		82,482		15,255		32,221			
Bartow	203,288		132,629		--		14,505		56,154		136,270		45,271		30,818		60,181			
Ben Hill	98,299		80,905		2,658		9,788		4,948		193,327		58,002		62,088		63,977			
Berrien	260,177		161,017		28,530		61,758		8,872		207,780		108,965		58,076		8,826			
Bibb	124,081		62,148		--		39,003		22,930		324,471		177,583		73,061		66,756			
Bleckley	79,465		7,484		--		39,682		32,299		144,201		64,513		25,423		52,243			
Brantley	198,500		110,425		17,486		56,720		13,869		310,318		181,483		99,317		27,576			
Brooks	188,000		78,188		21,656		57,611		30,545		104,106		47,382		51,126		10,428			
Bryan	339,840		215,561		5,206		80,522		38,551		268,509		38,565		31,001		161,256			
Bulloch	328,479		156,306		4,476		127,906		39,791		115,048		33,299		49,443		32,306			
Burke	353,620		113,944		8,476		138,333		92,867		252,461		155,032		13,860		83,569			
Butts	107,787		60,496		798		20,507		25,986		119,963		67,572		17,163		35,228			
Calhoun	128,313		24,984		16,365		38,235		64,729		368,364		36,663		20,089		55,181			
Camden	369,004		174,599		24,284		105,140		64,981		336,521		54,250		77,697		104,481			
Candler	104,072		40,115		2,351		49,494		12,112		61,650		29,789		12,908		165,550			
Carroll	201,910		76,583		--		45,102		80,225		191,512		74,578		42,941		18,953			
Catoosa	61,013		11,371		--		12,683		36,959		124,059		73,187		6,486		44,386			
Charlton	291,164		230,415		21,768		33,598		5,383		216,681		121,476		43,138		52,067			
Chatham	171,081		75,093		6,481		55,654		33,853		236,502		162,150		42,965		31,046			
Chatahoochee	184,194		105,320		--		56,355		22,519		239,284		135,079		54,905		49,300			
Chattooga	137,429		59,569		--		20,632		57,228		205,775		93,360		21,915		85,636			
Cherokee	306,532		152,197		--		59,049		95,286		179,614		82,200		31,274		66,140			
Clarke	55,590		23,779		--		19,952		11,859		322,923		223,819		57,092		42,012			
Clay	66,199		30,684		--		14,298		21,217		176,287		82,120		39,680		54,487			
Clayton	65,837		37,556		--		9,681		18,600		243,941		129,593		63,052		50,964			
Clinch	397,303		228,038		74,128		87,756		7,381		171,088		102,570		12,913		47,605			
Cobb	205,090		156,015		--		24,445		24,630		117,689		72,229		27,605		17,855			
Coffee	219,465		148,381		9,883		48,672		12,529		169,281		103,030		27,999		38,252			
Colquitt	165,161		124,275		6,169		22,172		12,545		162,839		43,568		66,974		51,549			
Columbia	238,108		153,253		200		47,970		36,685		175,358		113,432		42,016		4,985			
Cook	100,983		51,368		4,468		25,547		19,600		170,011		99,140		34,053		36,285			
Coweta	221,311		84,103		--		67,240		69,968		270,194		157,848		54,492		56,439			
Crawford	103,696		56,704		--		36,314		10,678		166,189		132,598		16,230		12,437			
Crisp	123,820		77,181		4,337		21,490		20,812											

Continued

Table 47.--Volume of growing stock on commercial forest land, by county and species group, Georgia, 1982--Continued

County	All species			Yellow pine			Other softwood			Soft hardwood			Hard hardwood		
	species	pine	hardwood	species	pine	hardwood	softwood	hardwood	hardwood	softwood	hardwood	hardwood	softwood	hardwood	
	Thousand cubic feet														
Jefferson	252,390	76,501	12,896	102,707	60,286										
Jenkins	193,950	70,102	7,800	62,590	53,458										
Johnson	128,174	64,841	--	47,310	16,023										
Jones	340,536	243,053	--	58,722	38,761										
Lamar	93,262	37,375	--	27,977	27,910										
Lanier	72,466	38,705	14,041	18,267	1,453										
Laurens	465,130	228,763	8,028	136,018	92,321										
Lee	129,466	47,762	2,732	24,474	54,498										
Liberty	362,645	219,809	8,744	77,327	56,765										
Lincoln	124,172	96,733	--	6,046	21,393										
Long	298,714	133,094	28,425	80,345	56,850										
Lowndes	219,929	79,995	20,271	77,342	42,321										
Lumpkin	274,006	90,271	27,148	35,945	120,642										
Macon	132,723	33,147	--	50,156	49,420										
Madison	106,927	59,529	287	27,685	19,426										
Marion	137,622	44,973	--	48,900	43,749										
McDuffie	177,429	117,916	--	33,864	25,649										
McIntosh	244,559	114,905	19,265	58,127	52,262										
Meriwether	211,785	106,522	334	54,495	50,434										
Miller	69,127	27,147	4,510	16,889	20,581										
Mitchell	119,103	79,652	3,709	19,121	16,621										
Monroe	241,025	106,588	--	61,043	73,394										
Montgomery	118,279	69,837	373	25,247	22,822										
Morgan	170,938	99,519	--	47,528	23,891										
Murray	195,158	86,422	10,606	18,323	79,807										
Muscogee	137,458	78,917	--	39,647	18,894										
Newton	150,070	89,289	--	21,642	39,139										
Oconee	118,165	55,430	--	29,047	33,688										
Oglethorpe	300,614	143,174	2,469	96,277	58,694										
Paulding	165,006	77,970	--	34,153	52,883										
Peach	36,198	18,863	--	10,210	7,125										
Pickens	150,212	68,828	5,391	24,940	24,940										
Pierce	182,393	106,486	18,398	51,482	6,027										
Pike	111,289	39,349	--	32,234	39,706										
Polk	127,066	69,092	760	7,420	49,794										
Pulaski	89,245	26,420	5,847	27,923	29,055										
Putnam	206,180	132,704	873	31,674	40,929										
Quitman	110,887	62,816	--	26,835	21,236										
Rabun	371,399	78,345	73,406	57,901	161,747										
Randolph	228,634	79,380	--	81,185	68,069										
Richmond	116,615	51,229	2,852	116,615	51,229										
Rockdale	61,883	44,561	223	61,883	44,561										
Schley	92,428	38,568	444	92,428	38,568										
Scriven	424,226	132,124	31,910	424,226	132,124										
Seminole	41,391	22,450	2,677	41,391	22,450										
Spalding	128,530	85,451	--	128,530	85,451										
Stephens	125,473	58,385	--	125,473	58,385										
Stewart	195,670	104,969	--	195,670	104,969										
Sumter	165,948	83,092	1,861	165,948	83,092										
Talbot	211,598	104,233	1,275	211,598	104,233										
Taliaferro	147,769	103,914	--	147,769	103,914										
Tattnall	218,833	127,474	7,029	218,833	127,474										
Taylor	149,430	69,940	982	149,430	69,940										
Telfair	298,282	180,065	8,005	298,282	180,065										
Terrell	132,312	21,781	3,419	132,312	21,781										
Thomas	247,091	166,981	--	247,091	166,981										
Tift	106,653	61,679	6,446	106,653	61,679										
Toombs	128,573	69,957	756	128,573	69,957										
Towns	144,083	49,863	1,374	144,083	49,863										
Treutlen	89,819	64,288	--	89,819	64,288										
Troup	222,898	123,627	291	222,898	123,627										
Turner	124,495	77,418	23,451	124,495	77,418										
Twiggs	253,540	96,009	--	253,540	96,009										
Union	263,293	42,106	24,496	263,293	42,106										
Upson	175,054	64,512	--	175,054	64,512										
Walker	185,189	53,600	503	185,189	53,600										
Walton	184,845	101,053	--	184,845	101,053										
Ware	249,584	184,363	24,363	249,584	184,363										
Warren	168,246	101,408	--	168,246	101,408										
Washington	312,729	154,541	497	312,729	154,541										
Wayne	304,082	184,651	36,884	304,082	184,651										
Webster	69,456	20,276	--	69,456	20,276										
Wheeler	166,946	94,535	1,246	166,946	94,535										
White	187,191	69,803	5,709	187,191	69,803										
Whitfield	180,181	95,109	--	180,181	95,109										
Wilcox	194,480	89,884	14,650	194,480	89,884										
Wilkes	406,779	247,691	788	406,779	247,691										
Wilkinson	322,263	114,011	19,130	322,263	114,011										
Worth	184,945	134,648	5,196	184,945	134,648										
Total	29,572,196	14,850,588	1,031,785	29,572,196	14,850,588										

6,710,725

Table 48.--Volume of sawtimber on commercial forest land, by county and species group, Georgia, 1982

County	All species				Yellow pine				Other softwood				Soft hardwood				Hard hardwood			
	Volume	Volume	Volume	Volume	Volume	Volume	Volume	Volume	Volume	Volume	Volume	Volume	Volume	Volume	Volume	Volume	Volume	Volume		
	Thousand board feet																			
Appling	729,248	457,750	90,505	124,791	56,202	212,067	17,413	4,361	37,546	152,747										
Atkinson	369,456	266,089	23,047	73,798	6,522	341,248	104,546	2,583	42,009	192,110										
Bacon	264,425	190,974	25,756	36,009	11,686	818,392	600,785	28,859	86,435	102,313										
Baker	496,136	258,707	32,106	26,253	179,070	469,990	278,344	--	44,416	147,230										
Baldwin	406,125	279,417	--	79,283	47,425	762,135	498,974	15,915	158,765	88,481										
Banks	343,132	153,745	--	74,121	115,266	399,090	302,133	62,032	99,096	57,829										
Barrow	234,683	117,826	--	40,060	76,797	558,651	302,259	112,136	88,438	164,537										
Bartow	550,633	367,966	--	52,893	129,774	389,872	136,897	--	88,438	164,537										
Ben Hill	324,681	268,181	7,059	34,505	14,936	540,698	147,656	20,487	166,299	206,256										
Berrien	738,179	559,508	65,672	90,006	22,993	378,771	193,646	73,607	100,155	11,363										
Bibb	445,061	267,777	--	106,707	70,577	1,018,114	631,500	20,898	170,994	194,722										
Bleckley	266,766	26,630	--	112,988	127,148	396,422	192,513	--	89,253	114,656										
Brantley	449,213	242,515	42,892	125,800	38,006	955,035	613,055	9,658	238,223	94,099										
Brooks	621,010	322,755	56,872	162,526	78,857	297,439	142,522	15,262	103,868	35,787										
Bryan	1,081,815	731,848	11,797	207,971	130,199	779,823	115,798	129,685	134,396	114,153										
Bulloch	1,065,717	569,770	13,025	353,668	129,254	372,912	124,363	--	134,396	114,153										
Burke	1,078,444	391,963	38,023	399,404	249,054	753,751	575,769	--	28,560	149,422										
Butts	309,028	190,818	1,322	62,165	54,723	323,848	191,053	--	43,141	89,654										
Calhoun	375,790	85,916	56,586	85,248	148,040	300,639	93,147	1,569	51,552	154,371										
Camden	994,006	421,218	102,751	236,622	233,415	1,273,516	664,756	--	249,634	359,126										
Candler	317,805	159,161	11,542	119,823	27,279	1,003,900	148,503	156,265	245,712	453,420										
Carroll	485,143	180,347	--	120,283	184,513	181,096	96,635	--	25,927	58,534										
Catoosa	184,641	52,053	--	26,690	105,898	603,801	219,829	73,291	122,710	187,971										
Charlton	662,997	514,235	59,925	73,586	15,251	259,829	145,782	--	5,722	108,325										
Chatham	562,254	296,123	17,994	130,865	117,272	871,815	567,034	--	122,405	182,376										
Chattahoochee	692,752	506,968	--	131,930	53,854	635,535	501,533	--	80,109	53,893										
Chattooga	321,568	144,426	--	46,971	130,171	807,137	470,341	--	174,703	162,093										
Cherokee	960,579	580,240	--	123,821	256,518	580,345	306,209	19,427	40,967	213,742										
Clarke	188,346	79,688	--	71,699	36,959	452,927	176,073	--	75,088	201,766										
Clay	183,079	84,336	--	37,293	61,450	1,024,431	782,050	--	148,241	94,140										
Clayton	209,034	144,796	--	23,603	40,635	534,202	293,294	--	101,260	139,648										
Glinch	768,074	419,332	158,126	158,590	32,026	702,471	437,608	1,348	136,474	127,041										
Gobb	734,727	581,659	--	76,463	76,605	147,462	13,880	--	16,454	117,128										
Coffee	546,278	381,688	27,998	104,042	32,550	331,444	208,334	--	88,194	34,916										
Colquitt	509,261	411,379	--	50,296	47,586	484,273	325,556	--	59,648	99,069										
Columbia	881,803	645,386	--	136,550	99,867	570,899	172,854	4,261	189,065	204,719										
Cook	306,838	195,653	14,936	39,761	56,488	569,084	403,306	51,337	98,944	15,497										
Coweta	646,057	264,945	--	202,268	178,844	530,373	333,013	3,126	90,648	103,586										
Crawford	247,988	140,415	--	87,657	19,916	907,978	644,242	3,125	128,958	131,653										
Crisp	385,463	261,319	16,606	51,991	55,547	552,145	459,051	16,636	38,746	37,712										

Continued

Table 49.--Net annual change of growing stock on commercial forest land, by county and species group, Georgia, 1981

County	Thousand cubic feet				Net change	County	Thousand cubic feet				Net change
	Pine	Other softwood	Soft hardwood	Hard hardwood			Pine	Other softwood	Soft hardwood	Hard hardwood	
Appling	+1,200	-675	+1,496	+543	+1,200	Dade	+231	+78	+1,289	+1,270	
Atkinson	+229	-974	+797	+232	+7,257	Dawson	+3,341	+124	+1,848	+1,944	
Bacon	-1,178	+349	+712	+229	-2,182	Decatur	-1,805	+233	-666	+56	
Baker	+4,661	+2,149	+303	+2,080	+4,853	De Kalb	+2,737	--	+644	+1,472	
Baldwin	-495	+16	+1,192	+146	+4,501	Dodge	+2,467	+102	+605	+1,327	
Banks	-2,038	+19	+346	+671	+1,523	Dooley	+338	+283	+617	+285	
Barrow	+1,726	+162	+651	+913	+5,454	Dougherty	+3,197	+836	+425	+996	
Bartow	+4,025	--	+359	+548	+4,666	Douglas	--	--	+1,609	+2,537	
Ben Hill	+3,310	+90	+357	+424	+4,216	Early	+951	+354	+675	+2,236	
Berrien	+9,679	+897	+2,347	+556	+5,977	Echols	+3,010	+444	+2,041	+482	
Bibb	+2,670	--	+676	+470	+7,819	Effingham	+5,698	-24	+987	+1,158	
Bleckley	-3,963	--	+584	-1,057	+285	Elbert	-1,020	+135	+10	+1,180	
Brantley	+1,298	+141	+1,191	-597	+1,643	Emanuel	+1,207	+35	+1,043	-642	
Brooks	+4,758	+725	+1,785	-308	+3,715	Evans	+2,114	-72	+1,286	+387	
Bryan	+6,200	+108	-886	+1,263	+9,319	Fannin	+2,947	+1,456	+1,456	+3,684	
Bulloch	+2,375	+98	+3,098	+514	-1,703	Fayette	-4,434	+1,232	+1,287	+1,444	
Burke	+4,754	+366	+3,690	+2,759	+6,840	Floyd	+3,800	--	+981	+2,059	
Butts	+585	+57	-689	+1,359	+3,663	Forsyth	+1,091	--	+830	+1,742	
Calhoun	+1,021	-89	+969	-662	-101	Franklin	-1,608	+78	+995	+434	
Camden	-598	+646	+2,357	+1,028	+14,672	Fulton	+8,310	--	+3,535	+2,827	
Candler	+108	+41	+738	+323	+6,768	Gilmer	+1,376	+188	+2,679	+2,525	
Carroll	+4,808	+1,795	+1,179	+1,834	+739	Glascok	+686	--	-262	+315	
Catoosa	+773	--	-170	+561	-7,354	Glynn	-8,732	+731	-776	+1,423	
Charlton	+8,624	+598	+181	-134	+3,273	Gordon	+1,888	--	+129	+1,256	
Chatham	+2,670	+185	+1,304	+339	+4,617	Grady	+1,855	--	+1,363	+1,399	
Chattahoochee	+4,439	--	+1,895	+805	-2,052	Greene	-1,866	+11	-709	+512	
Chattooga	+711	--	+1,046	+378	+4,651	Gwinnett	+3,068	--	+1,225	+358	
Cherokee	+8,412	+3,239	+2,190	+2,983	+2,169	Habersham	-390	+189	+1,288	+1,082	
Clarke	-64	-1,558	+926	+568	+2,874	Hall	+1,229	+152	+1,294	+199	
Clay	+1,637	+594	+459	+584	+3,124	Hancock	+1,476	--	+603	+1,045	
Clayton	+2,838	+1,093	+775	+970	+7,429	Haralson	+3,221	--	+1,763	+2,445	
Clinch	+4,586	+123	+2,289	+280	+2,603	Harris	-572	+11	+947	+2,217	
Cobb	+4,965	+4,332	+1,285	-652	+1,885	Hart	-51	+72	+586	+1,278	
Coffee	-2,955	-1	+401	+122	-11,753	Heard	-5,679	--	-1,719	-4,355	
Colquitt	+4,900	+573	+423	+229	+3,571	Henry	+1,309	--	+731	+1,531	
Columbia	+5,531	+6	+219	-645	-8,126	Houston	-6,046	+30	+911	-3,021	
Cook	+731	+93	+268	+1,231	+6,259	Irwin	+5,109	+362	+513	+275	
Coweta	+301	--	+508	+2,760	+7,372	Jackson	+3,964	+13	+1,597	+1,798	
Crawford	-6,192	--	-362	-29	+6,489	Jasper	+3,779	-5	+1,863	+852	
Crisp	+4,946	+110	+530	+560	+3,446	Jeff Davis	+2,781	+129	+510	+26	

Continued

Table 49.--Net annual change of growing stock on commercial forest land, by county and species group, Georgia, 1981--Continued

County	Net change	Pine	Other softwood	Soft hardwood	Hard hardwood	Thousand cubic feet				
						Net change	Pine	Other softwood	Soft hardwood	Hard hardwood
Jefferson	+2,022	-1,711	+738	+1,541	+1,454	-436	+608	-79	-1,724	+759
Jenkins	+4,984	+432	+149	+2,183	+2,220	+3,085	+2,220	+16	+444	+405
Johnson	+2,025	+1,274	--	+664	+87	+478	-1,204	+13	+922	+747
Jones	+9,018	+4,834	--	+2,476	+1,708	+9,127	+616	+287	+5,203	+3,021
Lamar	-1,791	-2,631	--	+281	+559	-2,552	-2,474	+71	+511	-660
Lanier	+548	-131	-48	+852	-125	+5,077	+3,522	--	+1,317	+238
Laurens	+3,393	-2,201	+140	+3,192	+2,262	-1,024	-717	--	+608	-915
Lee	+3,719	+2,808	+101	+313	+497	-7,918	-8,084	-120	-327	+613
Liberty	+3,939	+2,210	+211	+172	+1,346	+5,266	+2,829	+63	+884	+1,490
Lincoln	-1,810	-2,071	--	-97	+358	+2,816	-856	+138	+1,562	+1,972
Long	+7,914	+4,724	+843	+1,105	+1,242	+281	+461	--	-1,140	+960
Lowndes	+1,035	-2,272	+491	+1,133	+1,683	-1,192	-2,382	+50	+541	+599
Lumpkin	+7,818	+3,006	+1,301	+879	+2,632	+3,477	+2,464	+58	-347	+1,302
Macon	-1,667	-3,228	--	+541	+1,020	+5,027	+2,399	+242	+801	+1,585
Madison	-3,180	-962	+21	-2,778	+539	+985	-1,493	+140	+1,321	+1,017
Marion	+2,454	-623	--	+1,266	+1,811	+3,947	+3,212	--	+194	+541
McDuffie	+3,521	+3,564	--	-577	+534	+3,762	+2,448	+148	+1,434	-268
McIntosh	+3,687	+2,755	+341	+508	+83	-2,776	-3,357	+63	+564	-46
Meriwether	-13,534	-13,636	-59	-1,144	+1,305	+4,544	+1,715	+142	+1,102	+1,585
Miller	+423	-786	+253	+411	+545	-2,508	-2,154	--	+231	-585
Mitchell	+1,975	+1,150	+71	+667	+87	+1,367	-1,701	+19	+1,979	+1,070
Monroe	-2,764	-6,837	--	+2,117	+1,956	+5,722	+4,414	+487	+339	+482
Montgomery	-314	+1,530	-329	+180	-1,695	+4,282	+1,919	--	+1,288	+1,075
Morgan	+1,987	+1,726	--	-244	+505	+4,730	+618	+1,021	+1,425	+1,666
Murray	+1,069	+203	-466	+1,010	+322	+2,577	-2,023	--	+2,173	+2,427
Muscogee	+3,626	+1,820	--	+1,224	+582	+5,199	+1,165	+53	+1,034	+2,947
Newton	+5,740	+3,478	+38	+819	+1,405	-7,557	-4,367	--	+2,413	+777
Oconee	+5,631	+2,310	--	+1,521	+1,800	-1,539	-2,371	+629	+47	+156
Oglethorpe	-169	-4,052	+100	+1,866	+1,917	+6,038	+3,418	--	+1,269	+1,351
Paulding	+5,603	+1,969	--	+2,153	+1,481	+4,272	+718	+18	+2,313	+1,223
Peach	+1,661	+564	--	+445	+652	+5,128	+3,140	+713	+735	+540
Pickens	+3,296	+990	+211	+858	+1,237	-4,739	-5,070	--	+189	+142
Pierce	+2,934	+1,432	+269	+1,144	+89	-1,568	-2,564	+51	+1,020	-75
Pike	+419	-1,201	--	-177	+1,797	+6,336	+2,210	+249	+1,493	+2,384
Polk	+3,314	+1,892	+156	+237	+1,029	-1,356	-3,536	--	+796	+1,384
Pulaski	+1,039	+370	+243	+141	+285	+5,584	+1,668	+535	+1,860	+1,521
Putnam	-3,351	-4,736	+49	-360	+1,696	+11,392	+7,581	-140	+2,092	+1,859
Quitman	+2,437	+1,117	--	+324	+996	+3,911	+2,399	+604	+878	+30
Rabun	+11,281	+780	+3,463	+2,868	+4,170	-2,670	-2,957	-89	-24	+400
Randolph	+141	-2,678	--	+360	+2,459					
Total	+388,276	+75,542	+27,343	+140,926	+144,465					

Table 50.--Net annual change of sawtimber on commercial forest land, by county and species group, Georgia, 1981

County	Net change	Pine	Other		Soft hardwood	Hard hardwood	County	Net change	Pine	Other		Soft hardwood	Hard hardwood
			softwood	hardwood						softwood	hardwood		
Thousand board feet													
Appling	-2,126	-8,793	+5,559	+5,561	+5,561	+5,561	Dade	+8,404	+16	+4,54	+1,282	+6,652	
Atkinson	-7,738	-10,827	+742	+2,184	+163	+163	Dawson	+15,654	+4,675	+311	+2,715	+7,953	
Bacon	+2,718	-1,889	+1,118	+1,950	+1,539	+1,539	Decatur	-4,842	-2,116	+1,307	-3,469	-564	
Baker	+27,203	+16,821	+916	+8,433	+8,433	+8,433	De Kalb	+19,411	+10,365	--	+3,249	+5,797	
Baldwin	-8,532	-13,705	--	+4,650	+523	+523	Dodge	+30,983	+24,368	+627	+1,428	+4,560	
Banks	-2,419	-7,918	--	+3,704	+1,795	+1,795	Dooley	+5,408	+148	+1,431	+4,808	-979	
Barrow	+7,367	-711	--	+2,382	+5,696	+5,696	Dougherty	+37,745	+23,477	+4,815	+1,809	+7,644	
Bartow	+8,155	+6,093	--	-431	+2,493	+2,493	Douglas	+22,296	+7,766	--	+4,542	+9,988	
Ben Hill	+5,648	+1,728	+245	+2,742	+933	+933	Early	+9,738	+3,030	+1,316	+345	+5,047	
Berrien	+39,933	+30,466	+4,011	+4,093	+1,363	+1,363	Echols	-12,175	-21,934	+1,675	+4,240	+3,844	
Bibb	+10,594	+3,885	--	+5,576	+1,133	+1,133	Effingham	+46,874	+37,861	+783	+2,109	+6,121	
Bleckley	-3,151	-6,701	--	+5,453	-1,903	-1,903	Elbert	+2,153	-3,368	+909	+1,341	+3,271	
Brantley	-1,320	+1,165	-616	+2,881	-4,750	-4,750	Emanuel	+6,741	+8,915	+220	+2,451	-4,845	
Brooks	+25,953	+12,767	+2,100	+6,131	+4,955	+4,955	Evans	+18,631	+11,875	+545	+4,940	+1,271	
Bryan	+26,499	+29,543	+330	-7,452	+4,078	+4,078	Fannin	+34,312	+7,934	+7,700	+5,181	+13,497	
Bulloch	-622	-12,769	+384	+10,576	+1,187	+1,187	Fayette	-10,541	-19,671	--	+4,356	+4,774	
Burke	+42,027	+12,570	+2,701	+15,553	+11,203	+11,203	Floyd	+29,406	+22,118	--	+1,199	+6,089	
Butts	+2,584	+6,176	+58	-4,442	+792	+792	Forsyth	+10,154	+2,191	--	+3,555	+4,408	
Calhoun	+4,865	-1,604	+2,500	+2,904	+1,065	+1,065	Franklin	+2,231	-4,288	+90	+2,497	+3,932	
Candler	+7,890	+4,925	+3,147	+5,206	+1,432	+1,432	Fulton	+69,441	+43,783	--	+13,348	+12,310	
Carroll	+26,249	+11,070	+257	+2,047	+661	+661	Gilmer	+19,277	+314	+232	+9,334	+9,397	
Catoosa	-11,835	+2,346	--	+3,318	+11,861	+11,861	Glascok	+9,453	+9,763	--	-1,504	+1,194	
Charlton	+6,465	-14,166	+1,823	+228	+2,716	+2,716	Glynn	-33,877	-48,382	+3,569	+2,856	+8,080	
Chatham	+16,147	-3,709	+947	+6,535	+186	+186	Gordon	+5,432	+1,914	--	-66	+3,584	
Chattahoochee	+1,272	+6,137	--	+6,740	+2,692	+2,692	Grady	+30,028	+13,325	--	+6,995	+9,708	
Chattooga	+35,485	-5,411	--	+2,724	+3,270	+3,270	Greene	-1,741	-1,495	+108	-4,142	+3,788	
Cherokee	-2,059	+14,800	--	+11,836	+8,849	+8,849	Gwinnett	+23,018	+17,935	--	+3,815	+1,268	
Clarke	+11,543	-7,336	--	+3,304	+1,973	+1,973	Habersham	+12,067	+6,672	+2,072	-413	+3,736	
Clay	+9,818	+5,773	--	+2,337	+3,433	+3,433	Hall	+14,287	+7,519	--	+5,096	+1,672	
Clayton	-16,304	-28,116	+5,785	+4,816	+4,081	+4,081	Hancock	+19,488	+13,169	--	+1,474	+4,845	
Clinch	+34,459	+30,792	--	+3,845	+1,211	+1,211	Haralson	+26,541	+16,223	--	+4,879	+5,439	
Cobb	+6,937	+7,091	+441	-496	-178	-178	Harris	+5,728	+561	+64	-25	+5,128	
Coffee	+5,472	+5,194	+121	-216	-99	-99	Hart	+7,270	-716	--	+1,583	+6,403	
Colquitt	+26,650	+30,661	+52	+119	+373	+373	Heard	-36,964	-14,059	--	-3,598	-19,307	
Columbia	+8,690	+3,604	+348	+1,171	-4,182	-4,182	Henry	+15,726	+10,875	--	-107	+4,958	
Cook	+9,546	-7,056	--	+4,874	+3,567	+3,567	Houston	-25,873	-19,910	+199	+4,484	-10,646	
Coweta	-37,295	+22,731	+562	+3,154	+11,728	+11,728	Irwin	+22,898	+18,673	+1,957	+1,595	+673	
Crawford	+29,669	+22,731	--	-1,291	+564	+564	Jackson	+35,672	+22,624	+78	+4,257	+8,713	
Crisp	+29,669	+22,731	--	-1,291	+564	+564	Jasper	+21,924	+13,773	+139	+4,533	+3,479	
							Jeff Davis	+23,971	+22,686	+439	+310	+536	

Continued

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Georgia's forests. Resour. Bull. SE-73. Asheville, NC: U.S. Department of Agriculture, Forest Service, Southeastern Forest Experiment Station; 1984. 92 p.

Between 1972 and 1982, area of commercial forest land declined from 24.8 to 23.7 million acres. Volume of softwood growing stock increased by 6 percent, while volume of hardwood growing stock increased by 17 percent. Net annual growth of softwood growing stock totaled 1.2 billion cubic feet compared with annual softwood removals of 1.1 billion cubic feet. Removals of hardwood growing stock equaled about one-half the volume of hardwood growth. Only 3 acres of pine stands were regenerated for every 5 acres of pine harvested.

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