United States
Department of
Agriculture

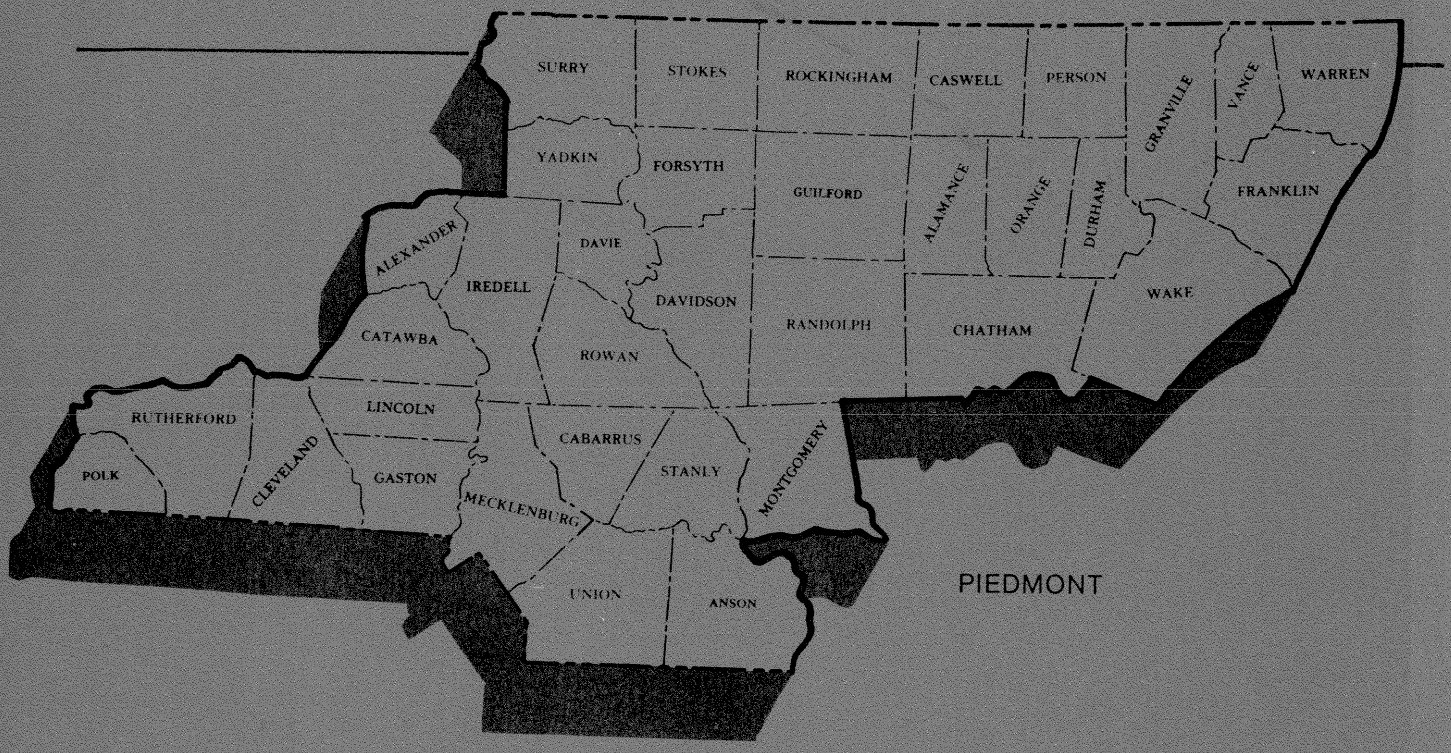
Forest Service

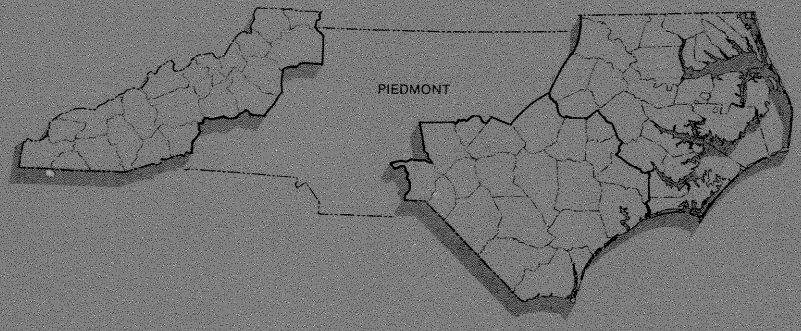
Southeastern Forest
Experiment Station

Resource Bulletin
SE-117

Forest Statistics for the Piedmont of North Carolina, 1990

Mark J. Brown





June 1991

Southeastern Forest Experiment Station
P.O. Box 2680
Asheville, North Carolina 28802

Forest Statistics for the Piedmont of North Carolina, 1990

Mark J. Brown, Forester
Forest Inventory and Analysis
Asheville, North Carolina

Foreword

This report highlights the principal findings of the sixth forest survey of the Piedmont of North Carolina. Field work began in March 1990 and was completed in July 1990. Five previous surveys, completed in 1937, 1956, 1964, 1975, and 1984, provide statistics for measuring changes and trends over the past 53 years. The primary emphasis in this report is on the changes and trends since 1984. Previously reported figures have been adjusted to provide the best estimate of change.

Periodic surveys of the forest resource are authorized by the Forest and Rangeland Renewable Resources Research Act of 1978. These surveys are a continuing, nationwide undertaking by the Regional Experiment Stations of the USDA Forest Service. In Florida, Georgia, North Carolina, South Carolina, and Virginia, these surveys are administered by the Forest Inventory and Analysis (Forest Survey) Research Unit at the Southeastern Forest Experiment Station, with headquarters in Asheville, NC. The primary objective of the survey is to periodically inventory and evaluate all forest and related resources. These multiresource data help provide a basis for formulating forest policies and programs and for the orderly development and use of the resources. This report deals only with the extent and condition of forest land, associated timber volumes, and rates of timber growth and removals.

The 35-county area covered by this report is one of four survey units in North Carolina. Similar reports, USDA Forest Service Resource Bulletins SE-111 and SE-113, have been issued for the Southern Coastal Plain and Northern Coastal Plain of North Carolina. A similar report for the Mountain region and a report containing many of the State totals are being released with this report. An indepth, analytical report on the timber resource should be available in 1992.

The Southeastern Station gratefully acknowledges the cooperation and assistance provided by the North Carolina Department of Environment, Health, and Natural Resources, Division of Forest Resources, in collecting field data. Appreciation is also expressed for the excellent cooperation of other public agencies, forest industry, and other private landowners in providing information and access to the sample locations.

Noel D. Cost
Project Leader

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Trends in timberland area since 1984, as shown in this report, reflect a 4.8-percent upward adjustment in the acreage of timberland for 1984. These revisions were necessary due to the incomplete and poor-quality aerial photography available at the time of the 1984 survey and to the associated difficulties in photo interpretation of land use. For those desiring more information about these changes, please contact the FIA staff at:

Forest Inventory and Analysis
Southeastern Forest Experiment Station
P.O.Box 2680
Asheville, NC 28802

Phone 704-257-4350

Since 1984 in the Piedmont of North Carolina--

- area of timberland has decreased by less than 1 percent and now totals under 5.8 million acres. Timberland presently accounts for 55 percent of the land in this 35-county area. A total of 338,000 acres involving timberland underwent some type of land use change during the period. Almost 156,000 acres of nonforest lands were converted to timberland, but 182,000 acres of timberland were concurrently diverted to other uses. Two-thirds of the diverted timberland was changed to urban and other uses, more than one-fourth changed to agricultural uses, and the remainder changed to new areas of water.

- area of forest industry holding declined nearly 11 percent to just over 250,000 acres. Farmer-owned timberland dropped by more than 7 percent to 2.0 million acres, continuing a long downward trend in this subcategory. However, due to increases in other individual and corporate ownerships, the entire nonindustrial private forest (NIPF) category remained stable at 5.3 million acres. Altogether, the NIPF category controls 93 percent of the timberland in this region, which is the highest percentage for this category in the entire Southeast. Public timberland increased about 2 percent to more than 160,000 acres.

- area of timberland classified as a pine forest type declined 2 percent to 1.8 million acres. About 32 percent of the timberland in this unit is in a pine type. Area of timberland in pine plantations now accounts for more than 400,000 acres, or 22 percent of the pine types. Of the pine types, loblolly pine covers the largest area with more than 850,000 acres--an increase of 10 percent. Virginia pine type with more than 580,000 acres decreased 2 percent, while the shortleaf type decreased 23 percent to just over 360,000 acres. About 14 percent, or 0.8 million acres, of the timberland in this region is in an oak-pine type. The oak-pine type increased 11 percent in area. The remaining 54 percent, or 3.1 million acres, of the timberland here is in one of the hardwood types. Area classified as a hardwood type decreased nearly 2 percent. The oak-hickory group constitutes 84 percent, or 2.6 million acres, of the area in a hardwood type.

- area harvested and retained in timberland averaged 72,000 acres annually, down almost 11 percent from the previous rate. Ninety-one percent of the acres harvested came from NIPF ownerships. Forest industry and public ownerships accounted for 8 and 1 percent, respectively. Pine and oak-pine stands together provided 54 percent of the area harvested annually. Within this grouping, natural pine stands accounted for 27,000 acres, oak-pine stands for 9,000 acres, and pine plantations for 3,000 acres of the annual harvest. Upland hardwood stands accounted for 42

percent of the area receiving a final harvest; lowland hardwood stands accounted for the remaining 4 percent. In addition to final harvests, partial harvests and other intermediate cuttings took place on another 27,000 acres each year. Natural disturbances such as fire, insects, diseases, and weather damaged nearly 176,000 acres annually.

- area artificially regenerated averaged 22,000 acres annually, a 27-percent increase over the previous rate. Artificial regeneration increased on all major ownership categories except forest industry, where annual planting decreased 34 percent to about 3,000 acres. Artificial regeneration on NIPF lands increased 57 percent to more than 18,000 acres annually. In addition to artificial regeneration, another 82,000 acres regenerated annually by natural means. Ninety-six percent of the natural regeneration occurred on NIPF lands. For all ownerships, natural reversion and planting on nonforest land averaged 21,000 acres annually. Combining both artificial and natural regeneration, nearly 105,000 acres were regenerated annually, exceeding the total area harvested by 45 percent.

- average basal area of live trees 5.0 inches d.b.h. and larger has increased about 2 percent, to 79 square feet per acre. Stands classified as fully stocked increased by 6 percent to 2.7 million acres, whereas medium-stocked stands decreased by 2 percent to 2.5 million acres, and poorly stocked stands declined by 20 percent to 0.5 million acres. Area in sawtimber-size stands remained stable at nearly 2.7 million acres. Almost 47 percent of the timberland in the region is classed as sawtimber size. The area in poletimber-size stands dropped 10 percent to less than 1.7 million acres. Sapling-size stands rose 14 percent to more than 1.3 million acres.

- volume of softwood growing stock has increased 1 percent to 3.9 billion cubic feet. Softwoods account for 38 percent of the entire growing-stock inventory. Softwood volume decreased almost 8 percent in the 6-inch diameter class, yet volume increased in all diameter classes above 18 inches by an average of nearly 28 percent. Volume of loblolly pine, the most predominant softwood species, increased 4 percent to 1.6 billion cubic feet. Virginia pine, second in prevalence at 1.1 billion cubic feet, increased 11 percent. Shortleaf pine continued a downward trend, dropping 10 percent to 1.1 billion cubic feet. Volume of softwood growing stock includes 11.8 billion board feet of sawtimber, up almost 7 percent.

- volume of hardwood growing stock has increased 7 percent to more than 6.3 billion cubic feet. Volume increased in all diameter classes 14 inches d.b.h. and larger. Collectively, oak species make up about 40 percent of the hardwood inventory and have increased 4 percent to 2.5 billion cubic feet. Select white oaks account for 41 percent of total oak volume. By individual species, yellow-poplar once again contains the most volume at 1.4 billion cubic feet, up about 10 percent. Sweetgum remains second, increasing 6 percent to 712 million cubic feet. These species are followed by soft maple with 537 million cubic feet, up 17 percent, and then hickory with 447 million cubic feet, down 2 percent. Volume of hardwood growing stock includes 19.4 billion board feet of sawtimber, up 12 percent.

- net annual growth of softwood growing stock increased 10 percent from 135 to 147 million cubic feet. Softwood net growth increased on NIPF and forest industry land, but dropped on public land. About 87 percent of the softwood net growth occurred on NIPF land, 9 percent on forest industry, and 4 percent

on public lands. Net annual growth of softwoods included 623 million board feet of sawtimber, up by 9 percent. In contrast to softwoods, hardwood net growth dropped 3 percent from 207 to 201 million cubic feet. Hardwood net growth was down on NIPF and forest industry land, but increased on public land. About 94 percent of the net annual growth of hardwood growing stock occurred on NIPF land, and 3 percent occurred on both public and forest industry holdings. Net annual growth of hardwoods included 784 million board feet of sawtimber, down 5 percent.

- annual removals of softwood growing stock have increased 12 percent to 140 million cubic feet. Softwoods comprised 52 percent of the total annual volume removed. Softwood removals were up on NIPF and public land, but down on forest industry holdings. NIPF land provided 89 percent of the softwood removals, while forest industry land supplied 5 percent, and public lands 6 percent. Removals of softwood growing stock included 502 million board feet of sawtimber, up 12 percent. Annual removals of hardwood growing stock increased 8 percent to 129 million cubic feet. Hardwood removals were up for all major ownership categories. About 96 percent of the hardwood removals came from NIPF land, 3 percent from forest industry, and the balance from public holdings. Removals of hardwood growing stock included 444 million board feet of sawtimber, up more than 9 percent. All ownerships combined, growth of softwood growing stock exceeded removals by only 5 percent. In comparison, hardwood growth exceeded removals by a larger margin of 55 percent.

- annual mortality of growing stock increased for both hardwoods and softwoods, totaling more than 93 million cubic feet. Softwood mortality rose 20 percent to more than 50 million cubic feet. Weather--primarily Hurricane Hugo--caused 40 percent of the softwood mortality, and insects caused 19 percent. Fully 95 percent of the softwood mortality occurred on NIPF land. Softwood mortality reduced gross growth 25 percent and included nearly 131 million board feet of sawtimber--up 117 percent. Hardwood mortality increased 75 percent to 43 million cubic feet. NIPF land accounted for 93 percent of the hardwood mortality. Weather was the leading identifiable cause of death to hardwoods with 28 percent of the mortality. Hardwood mortality reduced gross growth 18 percent and included more than 110 million board feet of sawtimber--up 69 percent.

How the Inventory is Made

The method of the inventory is a sampling procedure designed to provide reliable statistics primarily at the State and Survey Unit levels. Individual county statistics are presented so that any combination of counties may be added together until a total is large enough to meet the desired degree of reliability. Procedures were as follows:

1. Initial estimates of forest and nonforest areas were based on the classification of 40,861 sample clusters systematically spaced on the latest aerial photographs available. A subsample of 2,883 of the 16-point clusters was ground checked, and a linear regression was fitted to the data to develop the relationship between the photo and ground classification of the subsample. This procedure provides a means for adjusting the initial estimates of area for change in land use since date of photography and for photo misclassification.

2. Estimates of timber volume and forest classification were based on measurements recorded at 1,588 ground sample locations systematically distributed on timberland. The plot design at each location was based on a cluster of 10 points. In most cases, variable plots, established by using a 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 inches d.b.h. were tallied on a fixed-radius plot around each point center.

3. Equations prepared from detailed measurements collected on standing trees in this Survey Unit, and similar measurements taken throughout the Southeast, were used to compute the volume of individual tally trees. A mirror caliper and sectional aluminum poles were used to obtain the additional measurements required to construct volume equations.

4. Felled trees were measured at 15 active cutting operations. These data will supplement the standing-tree volume data and be used to generate utilization factors for product and species groups. Forest biomass estimates were made from equations developed by the Utilization of Southern Timber Research Work Unit of the Southeastern Forest Experiment Station in Athens, GA.

5. Estimates of growth, removals, and mortality were determined from the remeasurement of 1,641 permanent sample plots established in the fifth survey.

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

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 data.

Reliability of the Data

Statistical analysis of these data indicates the following sampling errors in terms of one standard error (two times out of three):

	Percent
Per million acres of timberland	1.00
Per billion cubic feet of growing stock	5.88
Per billion cubic feet of net annual growth	1.08
Per billion cubic feet of annual removals	3.82

Sampling errors for county and unit totals,[a] in terms of one standard error, Piedmont of North Carolina, 1990

County	Timberland area	Cubic-foot volume of growing stock		
		Inventory	Growth	Removals
		Sampling error[b]		
Alamance	2.70	9.84	9.54	39.42
Alexander	1.73	9.72	12.29	46.12
Anson	2.80	11.95	12.72	30.79
Cabarrus	2.20	14.87	15.59	54.18
Caswell	1.80	8.96	8.05	53.48
Catawba	2.46	14.24	13.38	63.42
Chatham	1.68	8.70	8.77	24.77
Cleveland	3.02	10.90	9.85	77.08
Davidson	1.75	9.70	10.15	42.11
Davie	2.18	14.45	11.89	71.72
Durham	5.56	10.26	12.99	36.33
Forsyth	2.21	9.36	9.61	56.43
Franklin	2.52	13.81	12.34	34.70
Gaston	2.59	12.73	12.38	61.11
Granville	1.92	8.68	7.61	45.29
Guilford	3.43	10.29	8.79	31.84
Iredell	1.81	14.53	12.14	41.60
Lincoln	3.31	15.33	14.14	56.48
Mecklenburg	4.00	10.06	12.25	48.19
Montgomery	1.37	8.34	9.99	27.22
Orange	2.33	10.05	8.74	42.60
Person	2.29	10.35	10.60	67.43
Polk	1.58	11.50	9.79	69.03
Randolph	1.36	8.32	8.06	32.16
Rockingham	1.66	8.26	8.91	42.71
Rowan	1.85	10.14	10.03	35.55
Rutherford	1.90	9.70	10.18	40.77
Stanly	2.34	12.50	18.22	66.28
Stokes	1.17	9.55	7.98	49.43
Surry	1.58	8.85	8.51	41.74
Union	1.85	10.76	9.32	58.63
Vance	2.62	14.28	12.16	47.66
Wake	3.50	7.51	6.68	30.20
Warren	1.85	11.08	10.02	33.94
Yadkin	2.41	13.42	14.14	61.66
Total	.40	1.83	1.83	7.39

[a]Sampling error of breakdowns of county and unit totals 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.

[b]By random-sampling formula (in percent).

Definitions of Terms

Allowable cut. The volume of timber that could be cut on timberland 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 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 timberland 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 lands. Federal lands 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.(see: Timberland).

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. Also 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.

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 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 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 tropicals. 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 a log grade of either 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 boxelder, 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. All lands held in trust by the United States for individual Indians or tribes, or all lands, titles to which are held by individual Indians or tribes, subject to Federal restrictions against alienation.

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 floodplains (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.

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

Live-tree volume. Volume (cubic feet) of wood above the ground line in 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.

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. Timberland at least 60 percent stocked with growing-stock trees that can be featured together under a management scheme.

Merchantable portion. That portion of 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 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 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. Timberland 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 timberland.

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. Live trees at least 5.0 inches d.b.h. but smaller than sawtimber size.

Productive-reserved forest land. (see: Reserved timberland).

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 timberland and not developed for another land use. Rangeland includes natural grassland and savannah.

Reserved timberland. Forest land sufficiently productive to qualify as timberland, but withdrawn from timber utilization through statute or administrative designation.

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 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 nonpulpmills, 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 live trees in the stand.

Sawtimber stands. Stands at least 16.7 percent stocked with live 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 live 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 live 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.

Timberland. 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 of producing 20 cubic feet of industrial wood per acre per year and not withdrawn from timber utilization by legislative action.

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.

Tree grade. A classification of sawtimber trees based on the log grade of the butt log in the tree.

Unproductive forest land. (see: Woodland).

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.

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

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. class	All species	Pine	Other softwood	Hardwood
6	60.6	61.0	68.2	60.0
8	68.4	68.1	76.0	68.4
10	73.3	73.1	81.4	73.4
12	76.5	76.7	85.2	76.4
14	78.8	79.4	88.2	78.4
16	80.3	81.6	90.4	79.8
18	81.2	83.3	92.3	80.8
20	82.0	84.8	93.8	81.5
22	82.5	86.0	95.1	82.1
24+	83.4	88.2	97.3	83.0
Average	74.2	72.6	79.1	75.0

Metric equivalents of units used in this report

1 acre = 4,046.86 square meters or 0.404686 hectare
1 cubic foot = 0.028317 cubic meter
1 inch = 2.54 centimeters or 0.0254 meter
Breast height (4.5 feet) = 1.4 meters above ground level
1 square foot = 929.03 square centimeters or 0.0929 square meter
1 square foot per acre basal area = 0.229568 square meter per hectare
1 pound = 0.454 kilogram
1 ton = 0.907 metric ton

County Tables

The county tables are intended for use in compiling forest resource estimates for groups of counties. Because the sampling procedure used by the Forest Survey was intended primarily to furnish inventory data for the survey unit as a whole, individual county estimates have limited and variable accuracy. As county totals are broken down by various subdivisions, the possibility of error increases and is greatest for the smallest items. The order of this increase can be computed with the formula on page 5 .

Table 1--Area, by county and land class, Piedmont of North Carolina, 1990

County	All land[a]	Forest land				Nonforest land[b]
		Total	Timberland	Woodland	Reserved timberland	
			Acres			
Alamance	277,210	126,888	126,888	--	--	150,322
Alexander	165,529	100,736	100,729	--	7	64,793
Anson	341,210	248,527	248,527	--	--	92,683
Cabarrus	233,011	108,406	108,406	--	--	124,605
Caswell	273,606	165,055	165,055	--	--	108,551
Catawba	253,222	115,396	115,396	--	--	137,826
Chatham	439,090	302,104	302,103	--	1	136,986
Cleveland	299,642	138,801	138,801	--	--	160,841
Davidson	350,899	181,963	181,866	--	97	168,936
Davie	170,618	75,257	75,257	--	--	95,361
Durham	186,538	90,169	89,242	--	927	96,369
Forsyth	263,987	112,697	112,697	--	--	151,290
Franklin	316,403	191,027	191,027	--	--	125,376
Gaston	228,666	113,810	111,665	--	2,145	114,856
Granville	339,745	225,371	225,121	--	250	114,374
Guilford	416,493	164,955	164,815	--	140	251,538
Iredell	367,437	162,688	161,551	--	1,137	204,749
Lincoln	190,886	90,834	90,826	--	8	100,052
Mecklenburg	337,773	132,831	132,831	--	--	204,942
Montgomery	313,312	256,595	256,555	--	40	56,717
Orange	256,172	148,023	146,622	--	1,401	108,149
Person	252,533	149,798	149,798	--	--	102,735
Polk	152,512	118,359	118,359	--	--	34,153
Randolph	504,851	317,657	311,657	--	6,000	187,194
Rockingham	363,930	208,080	208,080	--	--	155,850
Rowan	332,173	150,498	150,498	--	--	181,675
Rutherford	363,277	267,970	267,970	--	--	95,307
Stanly	253,299	116,270	111,927	--	4,343	137,029
Stokes	289,305	189,671	183,554	--	6,117	99,634
Surry	345,178	194,039	189,185	--	4,854	151,139
Union	409,139	178,026	178,026	--	--	231,113
Vance	159,226	102,275	102,275	--	--	56,951
Wake	537,133	252,304	246,464	--	5,840	284,829
Warren	273,344	195,445	195,445	--	--	77,899
Yadkin	214,874	92,145	91,905	--	240	122,729
Total	10,472,223	5,784,670	5,751,123	--	33,547	4,687,553

[a]From U.S. Bureau of the Census, 1980.

[b]Includes 60,752 acres of water according to Forest Survey standards of area classification, but defined by the Bureau of Census as land.

Table 2--Area of timberland, by county and ownership class, Piedmont of North Carolina, 1990

County	All ownerships	Ownership class							
		National forest	Miscellaneous Federal	State	County and municipal	Forest industry[a]	Other private		
							Farmer	Corporate	Individual
					Acres				
Alamance	126,888	--	--	242	898	206	36,341	3,304	85,897
Alexander	100,729	--	--	7	20	7,049	38,313	4,257	51,083
Anson	248,527	--	5,759	206	365	41,633	47,406	25,526	127,632
Cabarrus	108,406	--	60	919	705	--	11,858	19,763	75,101
Caswell	165,055	--	--	13,220	405	5,652	111,660	6,203	27,915
Catawba	115,396	--	--	75	1,211	945	22,633	18,106	72,426
Chatham	302,103	--	12,266	410	211	32,000	66,141	25,722	165,353
Cleveland	138,801	--	--	--	668	6,032	73,003	10,429	48,669
Davidson	181,866	956	--	191	1,110	3,562	41,202	14,983	119,862
Davie	75,257	--	--	214	100	221	40,030	8,006	26,686
Durham	89,242	--	7,891	4,556	2,632	235	15,564	19,455	38,909
Forsyth	112,697	--	--	--	652	220	10,822	18,036	82,967
Franklin	191,027	--	--	55	148	8,596	95,075	15,846	71,307
Gaston	111,665	--	--	300	803	--	26,015	29,266	55,281
Granville	225,121	--	5,716	6,934	25	6,874	147,327	--	58,245
Guilford	164,815	--	--	424	4,828	--	46,418	23,209	89,936
Iredell	161,551	--	--	55	143	1,619	60,440	30,220	69,074
Lincoln	90,826	--	--	22	110	680	33,339	10,002	46,673
Mecklenburg	132,831	--	--	737	1,770	--	21,020	33,632	75,672
Montgomery	256,555	36,807	--	100	186	34,487	36,995	18,498	129,482
Orange	146,622	--	340	2,463	1,659	1,798	49,540	--	90,822
Person	149,798	--	--	--	685	6,685	50,042	7,699	84,687
Polk	118,359	--	--	4,929	560	12,926	7,996	31,982	59,966
Randolph	311,657	4,140	--	47	1,022	4,448	161,634	12,761	127,605
Rockingham	208,080	--	--	386	1,062	1,013	124,618	15,577	65,424
Rowan	150,498	--	100	3	645	616	45,569	12,428	91,137
Rutherford	267,970	--	--	15	583	28,842	59,633	51,682	127,215
Stanly	111,927	--	--	--	425	3,694	53,904	7,187	46,717
Stokes	183,554	--	--	242	97	865	64,359	7,151	110,840
Surry	189,185	--	--	220	657	578	69,939	14,724	103,067
Union	178,026	--	--	10	1,577	2,298	104,485	6,966	62,690
Vance	102,275	--	8,998	16	308	3,417	76,106	--	13,430
Wake	246,464	--	11,286	2,650	1,885	2,012	66,831	42,209	119,591
Warren	195,445	--	770	28	210	33,321	76,530	4,028	80,558
Yadkin	91,905	--	--	119	90	463	51,090	3,649	36,494
Total	5,751,123	41,903	53,186	39,795	28,455	252,987	2,043,878	552,506	2,738,413

[a]Includes 29,787 acres of other private land under long-term lease.

Table 3--Area of timberland, by county and forest-type group, Piedmont of North Carolina, 1990

County	All type groups	Forest-type group								
		White pine-hemlock	Spruce-fir	Longleaf-slash	Loblolly-shortleaf	Oak-pine	Oak-hickory	Oak-gum-cypress	Elm-ash-cottonwood	Maple-beech-birch
					Acres					
Alamance	126,888	--	--	--	33,036	6,850	77,091	6,607	3,304	--
Alexander	100,729	--	--	--	37,077	18,035	45,617	--	--	--
Anson	248,527	--	--	--	137,059	40,111	61,183	10,174	--	--
Cabarrus	108,406	--	--	--	40,446	8,610	51,384	4,013	3,953	--
Caswell	165,055	--	--	--	62,092	31,625	55,830	9,305	6,203	--
Catawba	115,396	--	--	--	46,892	18,107	45,871	--	4,526	--
Chatham	302,103	--	--	--	106,542	58,794	122,676	10,416	3,675	--
Cleveland	138,801	--	--	--	37,318	34,765	66,718	--	--	--
Davidson	181,866	--	--	--	33,718	27,175	113,481	3,746	3,746	--
Davie	75,257	--	--	--	26,686	--	35,229	5,337	8,005	--
Durham	89,242	--	--	--	30,533	14,303	31,363	13,043	--	--
Forsyth	112,697	--	--	--	28,857	18,253	58,372	7,215	--	--
Franklin	191,027	--	--	--	84,255	27,731	67,156	11,885	--	--
Gaston	111,665	--	--	--	36,070	23,567	48,777	--	3,251	--
Granville	225,121	--	--	--	84,541	17,131	109,745	10,278	3,426	--
Guilford	164,815	--	--	--	49,744	14,018	81,232	8,704	11,117	--
Iredell	161,551	--	--	--	40,527	4,318	108,071	--	8,635	--
Lincoln	90,826	--	--	--	30,707	10,002	43,450	3,334	3,333	--
Mecklenburg	132,831	--	--	--	47,129	9,293	72,205	--	4,204	--
Montgomery	256,555	--	--	--	94,411	51,750	99,295	11,099	--	--
Orange	146,622	--	--	--	38,388	17,743	73,638	12,725	4,128	--
Person	149,798	--	--	--	39,102	15,398	83,750	11,548	--	--
Polk	118,359	--	--	--	34,496	35,191	48,672	--	--	--
Randolph	311,657	--	--	--	32,377	36,146	238,880	4,254	--	--
Rockingham	208,080	--	--	--	97,210	15,577	82,831	6,231	6,231	--
Rowan	150,498	--	--	--	33,760	24,856	79,354	8,385	4,143	--
Rutherford	267,970	3,975	--	--	97,976	54,881	99,211	3,976	7,951	--
Stanly	111,927	--	--	--	36,464	10,355	61,514	3,594	--	--
Stokes	183,554	--	--	--	50,435	17,878	111,665	--	3,576	--
Surry	189,185	3,681	--	--	29,448	33,129	115,565	3,681	3,681	--
Union	178,026	--	--	--	33,654	29,440	101,001	6,966	6,965	--
Vance	102,275	--	--	--	39,202	11,203	47,393	4,477	--	--
Wake	246,464	--	--	--	92,598	21,351	100,859	28,139	3,517	--
Warren	195,445	--	--	--	64,077	28,196	93,301	--	9,871	--
Yadkin	91,905	--	--	--	26,129	18,247	40,231	--	7,298	--
Total	5,751,123	7,656	--	--	1,832,956	804,029	2,772,611	209,132	124,739	--

Table 4--Area of timberland, by county and stand-size class, Piedmont of North Carolina, 1990

County	All stands	Stand-size class			Nonstocked areas
		Sawtimber	Poletimber	Sapling-seedling	
			Acres		
Alamance	126,888	70,726	36,340	19,822	--
Alexander	100,729	39,340	43,355	18,034	--
Anson	248,527	85,551	66,839	89,431	6,706
Cabarrus	108,406	40,506	40,232	27,668	--
Caswell	165,055	89,561	49,829	22,360	3,305
Catawba	115,396	41,345	37,763	36,288	--
Chatham	302,103	139,878	74,812	83,738	3,675
Cleveland	138,801	63,242	42,024	33,535	--
Davidson	181,866	75,566	63,990	42,310	--
Davie	75,257	32,344	21,565	21,348	--
Durham	89,242	57,450	27,901	3,891	--
Forsyth	112,697	87,231	7,431	14,428	3,607
Franklin	191,027	71,506	48,211	71,310	--
Gaston	111,665	62,083	23,566	26,016	--
Granville	225,121	113,090	74,344	37,687	--
Guilford	164,815	84,071	46,419	34,325	--
Iredell	161,551	64,899	43,227	53,425	--
Lincoln	90,826	46,697	20,112	24,017	--
Mecklenburg	132,831	73,238	42,040	17,553	--
Montgomery	256,555	92,250	76,561	87,744	--
Orange	146,622	95,850	30,131	20,641	--
Person	149,798	64,503	48,422	36,873	--
Polk	118,359	61,457	33,609	23,293	--
Randolph	311,657	115,927	110,998	84,732	--
Rockingham	208,080	87,862	79,716	37,387	3,115
Rowan	150,498	96,026	29,614	24,858	--
Rutherford	267,970	107,163	78,095	82,712	--
Stanly	111,927	49,885	28,748	33,294	--
Stokes	183,554	89,765	61,609	32,180	--
Surry	189,185	84,663	85,539	18,983	--
Union	178,026	59,612	71,233	47,181	--
Vance	102,275	52,963	25,788	23,524	--
Wake	246,464	163,534	49,732	33,198	--
Warren	195,445	90,668	46,968	50,859	6,950
Yadkin	91,905	47,439	29,750	14,716	--
Total	5,751,123	2,697,891	1,696,513	1,329,361	27,358

Table 5--Area of timberland, by county and site class, Piedmont of North Carolina, 1990

County	All classes	Site class (cubic feet per acre per year)				
		>164	120-164	85-119	50-84	20-49
		Acres				
Alamance	126,888	--	--	39,886	80,394	6,608
Alexander	100,729	--	9,521	47,853	33,834	9,521
Anson	248,527	6,706	3,647	95,359	124,583	18,232
Cabarrus	108,406	--	--	16,789	75,806	15,811
Caswell	165,055	15,507	18,812	42,631	75,456	12,649
Catawba	115,396	--	--	32,291	69,524	13,581
Chatham	302,103	--	7,348	102,810	184,597	7,348
Cleveland	138,801	--	--	47,753	84,096	6,952
Davidson	181,866	--	3,746	56,835	110,047	11,238
Davie	75,257	--	2,669	40,128	32,460	--
Durham	89,242	--	3,891	26,993	58,358	--
Forsyth	112,697	7,434	3,607	61,759	39,897	--
Franklin	191,027	--	7,922	74,989	108,116	--
Gaston	111,665	6,504	3,252	42,574	49,580	9,755
Granville	225,121	--	3,426	58,246	146,318	17,131
Guilford	164,815	8,703	26,109	57,960	69,141	2,902
Iredell	161,551	--	4,317	60,638	74,833	21,763
Lincoln	90,826	3,334	3,334	40,137	44,021	--
Mecklenburg	132,831	--	8,408	51,333	60,478	12,612
Montgomery	256,555	--	3,699	87,954	149,714	15,188
Orange	146,622	--	--	71,751	74,871	--
Person	149,798	--	3,849	33,023	109,077	3,849
Polk	118,359	3,998	7,996	43,745	43,422	19,198
Randolph	311,657	4,254	--	47,873	214,117	45,413
Rockingham	208,080	3,115	18,692	82,404	97,638	6,231
Rowan	150,498	--	8,285	54,599	87,614	--
Rutherford	267,970	7,951	7,951	71,504	137,225	43,339
Stanly	111,927	--	--	21,137	72,296	18,494
Stokes	183,554	10,728	21,452	47,688	96,535	7,151
Surry	189,185	3,681	7,362	37,467	125,951	14,724
Union	178,026	--	--	35,229	114,934	27,863
Vance	102,275	--	--	45,928	50,731	5,616
Wake	246,464	--	14,069	98,091	130,787	3,517
Warren	195,445	--	4,028	76,161	115,256	--
Yadkin	91,905	--	7,299	26,098	54,858	3,650
Total	5,751,123	81,915	214,691	1,877,616	3,196,565	380,336

Table 6--Area of timberland, by county and stocking class of growing-stock trees, Piedmont of North Carolina, 1990

County	All classes	Stocking class (percent)[a]				
		>130	100-130	60-99	16.7-59	<16.7
		Acres				
Alamance	126,888	3,303	49,798	63,670	10,117	--
Alexander	100,729	--	27,563	64,652	8,514	--
Anson	248,527	24,939	123,721	68,196	24,965	6,706
Cabarrus	108,406	7,905	25,340	67,257	7,904	--
Caswell	165,055	12,611	68,476	65,156	15,507	3,305
Catawba	115,396	9,053	51,344	45,871	9,128	--
Chatham	302,103	40,764	111,492	135,149	11,023	3,675
Cleveland	138,801	--	40,793	84,103	13,905	--
Davidson	181,866	3,746	74,477	96,151	7,492	--
Davie	75,257	2,768	43,135	21,348	8,006	--
Durham	89,242	13,950	46,803	28,254	235	--
Forsyth	112,697	10,821	39,900	54,762	3,607	3,607
Franklin	191,027	27,393	83,245	72,465	7,924	--
Gaston	111,665	9,755	36,873	55,281	9,756	--
Granville	225,121	30,837	108,585	78,847	6,852	--
Guilford	164,815	19,821	72,953	54,635	14,505	2,901
Iredell	161,551	4,317	47,665	75,032	30,220	4,317
Lincoln	90,826	3,333	46,697	37,462	3,334	--
Mecklenburg	132,831	16,816	46,244	56,422	13,349	--
Montgomery	256,555	20,140	95,536	109,772	31,107	--
Orange	146,622	12,384	64,726	63,586	5,926	--
Person	149,798	9,928	66,047	66,125	7,698	--
Polk	118,359	3,207	51,277	55,880	7,995	--
Randolph	311,657	4,253	103,919	160,949	42,536	--
Rockingham	208,080	22,575	88,928	84,116	9,346	3,115
Rowan	150,498	4,787	74,569	66,997	4,145	--
Rutherford	267,970	23,602	94,249	114,340	35,779	--
Stanly	111,927	3,594	36,462	53,903	17,968	--
Stokes	183,554	18,605	50,436	103,786	10,727	--
Surry	189,185	7,361	63,375	92,682	25,767	--
Union	178,026	6,966	57,704	99,414	13,942	--
Vance	102,275	15,680	58,287	27,169	1,139	--
Wake	246,464	17,587	110,428	114,932	3,517	--
Warren	195,445	36,251	90,828	50,438	10,978	6,950
Yadkin	91,905	7,300	22,358	51,179	11,068	--
Total	5,751,123	456,352	2,274,233	2,539,981	445,981	34,576

[a]See stocking standards on page 13.

Table 7--Volume of growing stock and sawtimber on timberland, by county and species group, Piedmont of North Carolina, 1990

County	Growing stock					Sawtimber				
	All species	Pine	Other softwood	Soft hardwood	Hard hardwood	All species	Pine	Other softwood	Soft hardwood	Hard hardwood
	Thousand cubic feet[a]					Thousand board feet				
Alamance	234,225	62,236	684	83,633	87,672	729,762	160,616	1,042	273,452	294,652
Alexander	154,903	70,947	5,276	38,977	39,703	351,289	135,045	23,305	89,275	103,664
Anson	371,770	231,551	911	77,509	61,799	1,116,830	802,327	--	174,850	139,653
Cabarrus	154,772	67,324	5,101	32,266	50,081	421,451	172,192	12,452	94,726	142,081
Caswell	307,217	131,248	1,587	88,038	86,344	900,631	387,200	3,757	267,023	242,651
Catawba	176,675	58,660	10,795	26,897	80,323	481,203	95,173	45,358	74,290	266,382
Chatham	523,853	242,722	6,661	144,349	130,121	1,639,166	761,484	2,990	453,405	421,287
Cleveland	209,031	60,709	1,044	57,161	90,117	667,021	175,856	2,332	188,553	300,280
Davidson	292,528	71,725	2,196	101,936	116,671	821,659	138,913	2,410	311,845	368,491
Davie	134,186	26,458	2,773	48,738	56,217	447,022	82,211	4,619	185,857	174,335
Durham	239,346	111,518	1,293	70,073	56,462	815,229	382,506	4,575	233,738	194,410
Forsyth	267,846	66,788	689	95,553	104,816	820,467	186,667	1,677	270,319	361,804
Franklin	323,427	179,572	447	68,287	75,121	1,000,826	585,670	--	209,379	205,777
Gaston	217,690	87,063	262	66,820	63,545	759,712	332,687	--	216,463	210,562
Granville	484,745	193,005	2,006	159,133	130,601	1,499,043	615,723	--	490,830	392,490
Guilford	357,586	125,833	979	156,532	74,242	1,197,153	373,659	--	600,995	222,499
Iredell	209,054	67,560	2,270	61,773	77,451	682,019	231,566	8,135	198,699	243,619
Lincoln	159,910	51,912	671	51,077	56,250	556,500	149,200	--	205,674	201,626
Mecklenburg	261,415	91,250	6,444	92,617	71,104	783,941	236,989	7,640	308,305	231,007
Montgomery	389,321	180,845	638	89,146	118,692	1,106,151	591,068	--	206,242	308,841
Orange	351,178	111,194	934	134,226	104,824	1,255,945	452,931	--	450,590	352,424
Person	244,350	77,437	3,542	69,407	93,964	682,405	201,373	9,713	184,411	286,908
Polk	195,286	66,265	1,753	38,920	88,348	548,825	134,456	10,051	122,159	282,159
Randolph	449,466	53,450	2,933	130,368	262,715	1,281,626	107,551	12,333	367,830	793,912
Rockingham	408,179	206,438	--	82,411	119,330	947,367	415,157	--	202,964	329,246
Rowan	288,990	87,188	3,863	86,383	111,556	913,763	296,260	8,022	269,797	339,684
Rutherford	418,831	189,344	3,616	65,460	160,411	1,132,368	507,911	7,849	150,710	465,898
Stanly	151,592	57,407	542	36,391	57,252	446,167	148,730	2,084	117,521	177,832
Stokes	362,758	116,364	1,179	109,755	135,460	1,002,009	307,054	6,088	287,999	400,868
Surry	314,256	72,409	12,022	82,301	147,524	823,450	200,284	44,562	184,848	393,756
Union	248,758	75,690	3,137	48,144	121,787	693,876	247,023	3,781	130,050	313,022
Vance	201,048	91,083	--	62,264	47,701	657,462	327,993	--	187,325	142,144
Wake	569,338	223,622	--	207,186	138,530	2,148,367	899,406	--	763,579	485,382
Warren	412,448	169,380	436	152,342	90,290	1,300,156	569,635	--	464,027	266,494
Yadkin	178,359	57,712	2,398	41,846	76,403	568,377	164,597	2,173	125,010	276,597
Total	10,264,337	3,833,909	89,082	2,957,919	3,383,427	31,199,238	11,577,113	226,948	9,062,740	10,332,437

[a]Factors for converting to cords are shown on page 13.

Table 8--Average net annual growth of growing stock and sawtimber on timberland, by county and species group, Piedmont of North Carolina, 1984-1989

County	Growing stock					Sawtimber				
	All species	Pine	Other softwood	Soft hardwood	Hard hardwood	All species	Pine	Other softwood	Soft hardwood	Hard hardwood
	Thousand cubic feet					Thousand board feet				
Alamance	6,898	1,903	22	2,493	2,480	30,013	9,600	111	9,740	10,562
Alexander	5,517	2,920	206	1,323	1,068	16,417	5,997	1,270	5,718	3,432
Anson	16,166	10,606	16	3,074	2,470	59,225	41,175	--	10,581	7,469
Cabarrus	5,837	2,774	152	1,428	1,483	19,229	9,740	364	2,955	6,170
Caswell	9,537	3,359	17	3,307	2,854	40,744	16,124	170	13,836	10,614
Catawba	5,926	2,565	445	895	2,021	28,000	13,245	1,892	4,316	8,547
Chatham	17,866	9,032	318	5,016	3,500	75,947	44,910	1,867	14,897	14,273
Cleveland	5,785	1,849	102	1,553	2,281	23,119	7,955	12	6,185	8,967
Davidson	11,433	4,690	109	3,371	3,263	38,909	12,199	155	12,743	13,812
Davie	4,898	1,087	133	1,783	1,895	16,354	4,049	241	6,411	5,653
Durham	8,414	4,540	20	2,395	1,459	37,615	19,657	68	10,700	7,190
Forsyth	7,872	1,836	5	3,454	2,577	35,896	9,602	25	14,569	11,700
Franklin	12,892	7,441	7	2,970	2,474	51,767	33,398	--	9,972	8,397
Gaston	5,803	2,043	--	2,118	1,642	25,850	9,776	--	9,131	6,943
Granville	15,187	6,914	42	4,635	3,596	63,374	28,327	--	19,361	15,686
Guilford	11,205	3,642	229	4,883	2,451	44,658	16,226	--	19,478	8,954
Iredell	8,570	3,087	46	2,411	3,026	34,646	12,326	316	9,326	12,678
Lincoln	5,258	2,173	108	1,413	1,564	26,234	8,968	120	9,589	7,557
Mecklenburg	8,140	2,939	265	2,843	2,093	34,838	11,697	926	11,345	10,870
Montgomery	15,680	8,988	34	3,283	3,375	72,584	45,835	104	9,733	16,912
Orange	9,650	3,214	38	3,652	2,746	43,809	15,822	--	14,836	13,151
Person	8,282	2,840	89	2,394	2,959	34,266	13,353	155	7,378	13,380
Polk	6,882	3,020	29	1,166	2,667	22,345	9,083	186	3,652	9,424
Randolph	15,099	2,428	98	4,830	7,743	54,205	6,236	427	16,774	30,768
Rockingham	13,982	7,349	--	2,901	3,732	58,946	31,592	--	10,302	17,052
Rowan	9,952	3,015	119	3,609	3,209	40,361	11,533	303	12,673	15,852
Rutherford	13,517	7,220	197	2,419	3,681	53,576	32,603	1,506	6,609	12,858
Stanly	5,455	2,406	58	1,227	1,764	14,905	6,010	119	3,002	5,774
Stokes	13,404	4,290	44	5,505	3,565	49,106	15,061	278	18,021	15,746
Surry	9,802	2,235	585	2,906	4,076	42,566	10,795	2,303	11,022	18,446
Union	7,948	1,943	107	1,940	3,958	29,232	7,971	1,058	4,779	15,424
Vance	6,812	3,242	--	1,756	1,814	28,379	13,957	--	7,230	7,192
Wake	17,655	8,048	11	5,983	3,613	81,565	39,858	--	26,416	15,291
Warren	14,803	6,013	50	5,270	3,470	56,897	27,450	--	17,867	11,580
Yadkin	5,782	1,889	196	1,562	2,135	21,227	6,976	162	5,004	9,085
Total	347,909	143,540	3,897	101,768	98,704	1,406,804	609,106	14,138	376,151	407,409

Table 9--Average annual removals of growing stock and sawtimber on timberland, by county and species group, Piedmont of North Carolina, 1984-1989

County	Growing stock					Sawtimber				
	All species	Pine	Other softwood	Soft hardwood	Hard hardwood	All species	Pine	Other softwood	Soft hardwood	Hard hardwood
	Thousand cubic feet					Thousand board feet				
Alamance	6,715	4,556	56	393	1,710	24,225	15,875	--	1,502	6,848
Alexander	5,474	1,562	199	2,064	1,649	18,743	4,742	1,051	6,194	6,756
Anson	13,883	11,792	--	858	1,233	49,640	44,838	--	2,926	1,876
Cabarrus	3,373	176	137	795	2,265	10,687	--	258	2,544	7,885
Caswell	4,511	3,789	--	410	312	17,532	15,898	--	1,142	492
Catawba	1,969	1,716	64	189	--	3,394	3,394	--	--	--
Chatham	24,728	14,737	256	3,782	5,953	95,262	62,573	354	11,388	20,947
Cleveland	1,347	760	--	259	328	5,029	2,475	--	1,519	1,035
Davidson	7,498	3,055	77	1,354	3,012	23,263	3,858	--	4,795	14,610
Davie	2,791	169	35	1,821	766	12,646	738	--	8,513	3,395
Durham	6,824	4,994	--	1,264	566	21,858	18,073	--	2,732	1,053
Forsyth	4,366	1,605	182	2,127	452	18,321	5,774	536	10,258	1,753
Franklin	13,946	5,390	--	4,759	3,797	49,632	22,623	--	14,422	12,587
Gaston	3,974	2,189	56	544	1,185	17,954	10,743	--	2,025	5,186
Granville	4,471	2,167	--	660	1,644	11,351	4,642	--	1,949	4,760
Guilford	9,288	2,520	135	2,269	4,364	35,202	6,021	322	9,760	19,099
Iredell	8,679	2,482	626	4,441	1,130	28,085	7,935	2,234	12,519	5,397
Lincoln	9,534	5,731	--	1,194	2,609	42,154	27,069	--	3,275	11,810
Mecklenburg	5,376	2,690	--	1,698	988	20,400	12,049	--	4,482	3,869
Montgomery	19,341	8,478	215	4,228	6,420	73,010	36,733	--	14,123	22,154
Orange	10,818	5,861	110	3,277	1,570	40,319	25,043	--	12,011	3,265
Person	4,502	1,721	--	1,730	1,051	15,542	8,056	--	4,517	2,969
Polk	1,676	1,081	--	280	315	2,679	364	--	1,135	1,180
Randolph	13,234	2,715	175	4,601	5,743	48,548	6,490	440	20,206	21,412
Rockingham	6,894	892	--	3,425	2,577	24,429	3,854	--	11,895	8,680
Rowan	6,692	5,053	77	1,001	561	25,278	20,265	--	2,873	2,140
Rutherford	7,502	1,850	--	647	5,005	19,340	3,116	--	1,981	14,243
Stanly	4,665	2,781	--	621	1,263	16,001	9,287	--	1,832	4,882
Stokes	8,775	5,419	--	2,049	1,307	27,180	15,344	--	7,598	4,238
Surry	5,883	2,962	1,576	322	1,023	14,963	5,046	3,900	1,330	4,687
Union	4,810	1,573	82	950	2,205	16,121	7,396	363	666	7,696
Vance	5,971	4,208	--	581	1,182	22,446	17,704	--	2,340	2,402
Wake	17,428	11,292	--	2,326	3,810	59,693	40,851	--	5,515	13,327
Warren	9,650	5,784	--	2,167	1,699	26,943	17,139	--	4,564	5,240
Yadkin	2,915	2,547	--	368	--	7,662	6,132	--	1,530	--
Total	269,503	136,297	4,058	59,454	69,694	945,532	492,140	9,458	196,061	247,873

Unit Tables

Table 10--Area of timberland, by forest type and ownership class, Piedmont of North Carolina, 1990

Forest type	All ownerships	Ownership class				
		National forest	Other public	Forest industry	Forest industry-leased	Other private
		Acres				
Softwood types						
White pine-hemlock	7,656	--	--	--	--	7,656
Spruce-fir	--	--	--	--	--	--
Longleaf pine	--	--	--	--	--	--
Slash pine	--	--	--	--	--	--
Loblolly pine	852,340	6,489	30,598	95,314	24,632	695,307
Shortleaf pine	361,159	1,363	4,190	13,450	--	342,156
Virginia pine	583,472	2,726	5,143	14,474	3,724	557,405
Sand pine	--	--	--	--	--	--
Eastern redcedar	32,397	--	--	--	--	32,397
Pond pine	--	--	--	--	--	--
Spruce pine	--	--	--	--	--	--
Pitch pine	3,588	--	--	3,588	--	--
Table Mountain pine	--	--	--	--	--	--
Total	1,840,612	10,578	39,931	126,826	28,356	1,634,921
Hardwood types						
Oak-pine	804,029	12,569	20,473	23,469	--	747,518
Oak-hickory	2,606,081	14,666	46,910	55,193	1,431	2,487,881
Chestnut oak	166,530	4,090	--	11,869	--	150,571
Southern scrub oak	--	--	--	--	--	--
Oak-gum-cypress	209,132	--	11,708	--	--	197,424
Elm-ash-cottonwood	124,739	--	2,414	5,843	--	116,482
Maple-beech-birch	--	--	--	--	--	--
Total	3,910,511	31,325	81,505	96,374	1,431	3,699,876
All types	5,751,123	41,903	121,436	223,200	29,787	5,334,797

Table 11--Area of timberland, by ownership and stocking classes of growing-stock trees, Piedmont of North Carolina, 1990

Ownership class	All classes	Stocking class (percent)[a]				
		>130	100-130	60-99	16.7-59	<16.7
		Acres				
National forest	41,903	1,364	12,270	28,269	--	--
Other public	121,436	14,158	51,780	48,164	4,029	3,305
Forest industry	223,200	17,580	91,628	92,800	15,210	5,982
Forest industry-leased	29,787	8,556	17,136	4,095	--	--
Other private	5,334,797	414,694	2,101,419	2,366,653	426,742	25,289
All ownerships	5,751,123	456,352	2,274,233	2,539,981	445,981	34,576

[a]See stocking standards on page 13.

Table 12--Area of timberland, by forest type and stand-size class, Piedmont of North Carolina, 1990

Forest type	All stands	Stand-size class			Nonstocked areas
		Sawtimber	Poletimber	Sapling-seedling	
		Acres			
Softwood types					
White pine-hemlock	7,656	3,681	3,975	--	--
Spruce-fir	--	--	--	--	--
Longleaf pine	--	--	--	--	--
Slash pine	--	--	--	--	--
Loblolly pine	852,340	321,695	255,124	272,461	3,060
Shortleaf pine	361,159	209,359	133,221	15,274	3,305
Virginia pine	583,472	206,061	242,132	131,672	3,607
Sand pine	--	--	--	--	--
Eastern redcedar	32,397	--	11,044	21,353	--
Pond pine	--	--	--	--	--
Spruce pine	--	--	--	--	--
Pitch pine	3,588	3,588	--	--	--
Table Mountain pine	--	--	--	--	--
Total	1,840,612	744,384	645,496	440,760	9,972
Hardwood types					
Oak-pine	804,029	327,022	220,147	256,860	--
Oak-hickory	2,606,081	1,330,402	684,676	577,292	13,711
Chestnut oak	166,530	100,517	54,149	11,864	--
Southern scrub oak	--	--	--	--	--
Oak-gum-cypress	209,132	116,131	60,515	32,486	--
Elm-ash-cottonwood	124,739	79,435	31,530	10,099	3,675
Maple-beech-birch	--	--	--	--	--
Total	3,910,511	1,953,507	1,051,017	888,601	17,386
All types	5,751,123	2,697,891	1,696,513	1,329,361	27,358

Table 13--Area of timberland, by stand-age and broad management classes, all ownerships, Piedmont of North Carolina, 1990

Stand-age class (years)	All classes	Broad management class				
		Pine plantation	Natural pine	Oak-pine	Upland hardwood	Lowland hardwood
			Acres			
0-10	807,190	178,537	142,274	166,694	316,011	3,674
11-20	581,336	90,483	131,599	90,316	248,948	19,990
21-30	541,888	83,639	228,549	67,611	130,347	31,742
31-40	697,903	49,789	343,313	64,856	208,706	31,239
41-50	715,441	--	247,274	118,857	302,446	46,864
51-60	698,360	--	169,018	103,035	402,799	23,508
61-70	521,389	--	86,412	81,891	320,871	32,215
71-80	384,203	--	35,021	40,648	271,380	37,154
81+	403,074	--	12,583	40,346	306,982	43,163
No manageable stand	400,339	3,647	38,474	29,775	264,121	64,322
All classes	5,751,123	406,095	1,434,517	804,029	2,772,611	333,871

Table 14--Area of timberland, by stand-age and broad management classes, public ownerships, Piedmont of North Carolina, 1990

Stand-age class (years)	All classes	Broad management class				
		Pine plantation	Natural pine	Oak-pine	Upland hardwood	Lowland hardwood
			Acres			
0-10	9,719	1,035	413	8,271	--	--
11-20	8,237	2,727	--	1,363	4,147	--
21-30	20,679	3,697	--	8,838	8,144	--
31-40	24,180	3,305	10,949	1,364	8,562	--
41-50	13,914	--	5,698	--	8,216	--
51-60	29,163	--	10,295	3,501	9,330	6,037
61-70	11,454	--	2,595	--	8,859	--
71-80	19,056	--	2,248	3,305	8,458	5,045
81+	17,618	--	1,363	6,400	6,815	3,040
No manageable stand	9,319	--	6,184	--	3,135	--
All classes	163,339	10,764	39,745	33,042	65,666	14,122

Table 15--Area of timberland, by stand-age and broad management classes, forest industry,[a] Piedmont of North Carolina, 1990

Stand-age class (years)	All classes	Broad management class				
		Pine plantation	Natural pine	Oak-pine	Upland hardwood	Lowland hardwood
			Acres			
0-10	60,041	43,760	1,442	3,589	11,250	--
11-20	44,054	19,671	5,983	3,588	14,812	--
21-30	45,791	35,412	6,359	--	4,020	--
31-40	26,833	9,201	10,358	1,007	6,267	--
41-50	19,282	--	5,734	12,117	1,431	--
51-60	8,375	--	5,207	3,168	--	--
61-70	6,422	--	--	--	3,501	2,921
71-80	12,583	--	3,588	--	8,995	--
81+	7,322	--	4,400	--	--	2,922
No manageable stand	22,284	--	4,067	--	18,217	--
All classes	252,987	108,044	47,138	23,469	68,493	5,843

[a]Includes 29,787 acres of other private land under long-term lease.

Table 16--Area of timberland, by stand-age and broad management classes, other private ownerships,[a] Piedmont of North Carolina, 1990

Stand-age class (years)	All classes	Broad management class				
		Pine plantation	Natural pine	Oak-pine	Upland hardwood	Lowland hardwood
			Acres			
0-10	737,430	133,742	140,419	154,834	304,761	3,674
11-20	529,045	68,085	125,616	85,365	229,989	19,990
21-30	475,418	44,530	222,190	58,773	118,183	31,742
31-40	646,890	37,283	322,006	62,485	193,877	31,239
41-50	682,245	--	235,842	106,740	292,799	46,864
51-60	660,822	--	153,516	96,366	393,469	17,471
61-70	503,513	--	83,817	81,891	308,511	29,294
71-80	352,564	--	29,185	37,343	253,927	32,109
81+	378,134	--	6,820	33,946	300,167	37,201
No manageable stand	368,736	3,647	28,223	29,775	242,769	64,322
All classes	5,334,797	287,287	1,347,634	747,518	2,638,452	313,906

[a]Excludes 29,787 acres of other private land under long-term lease to forest industry.

Table 17--Area of timberland, by broad management and stand-volume classes, Piedmont of North Carolina, 1990

Broad management class	All classes	Stand-volume class (cubic feet of growing stock per acre)				
		0-499	500-999	1000-1499	1500-1999	2000+
		Acres				
Pine plantation	406,095	199,663	32,276	45,355	33,826	94,975
Natural pine	1,434,517	222,041	86,595	183,576	204,897	737,408
Oak-pine	804,029	208,423	92,170	120,618	119,102	263,716
Upland hardwood	2,772,611	476,866	321,250	398,521	491,952	1,084,022
Lowland hardwood	333,871	53,354	40,551	53,579	26,973	159,414
All classes	5,751,123	1,160,347	572,842	801,649	876,750	2,339,535

Table 18--Volume of growing stock on timberland, by broad management class, species group, and stand-age class, Piedmont of North Carolina, 1990

Broad management class and species group	All classes	No manageable stand	Stand-age class (years)								
			0-10	11-20	21-30	31-40	41-50	51-60	61-70	71-80	81+
			Thousand cubic feet								
Pine plantation											
Softwood	385,838	--	7,733	93,752	177,812	106,541	--	--	--	--	--
Hardwood	29,864	--	1,355	8,616	12,731	7,162	--	--	--	--	--
Total	415,702	--	9,088	102,368	190,543	113,703	--	--	--	--	--
Natural pine											
Softwood	2,636,780	9,741	25,569	88,866	369,842	801,584	588,388	403,934	226,202	92,848	29,806
Hardwood	392,021	3,414	2,229	13,682	41,508	73,449	103,571	75,090	48,330	20,396	10,352
Total	3,028,801	13,155	27,798	102,548	411,350	875,033	691,959	479,024	274,532	113,244	40,158
Oak-pine											
Softwood	547,954	7,463	6,038	32,281	43,238	58,601	105,199	115,683	85,228	34,362	59,861
Hardwood	681,843	13,787	16,425	35,467	24,791	58,267	147,651	156,212	95,852	51,356	82,035
Total	1,229,797	21,250	22,463	67,748	68,029	116,868	252,850	271,895	181,080	85,718	141,896
Upland hardwood											
Softwood	331,536	14,209	9,874	15,521	16,918	40,726	41,334	74,351	51,245	38,499	28,859
Hardwood	4,600,932	170,432	90,484	134,626	159,350	290,550	594,219	940,476	729,884	706,295	784,616
Total	4,932,468	184,641	100,358	150,147	176,268	331,276	635,553	1,014,827	781,129	744,794	813,475
Lowland hardwood											
Softwood	20,883	844	--	584	1,240	--	1,865	9,886	3,659	2,805	--
Hardwood	636,686	36,161	734	11,245	31,098	46,210	103,841	79,839	103,575	107,605	116,378
Total	657,569	37,005	734	11,829	32,338	46,210	105,706	89,725	107,234	110,410	116,378
All types											
Softwood	3,922,991	32,257	49,214	231,004	609,050	1,007,452	736,786	603,854	366,334	168,514	118,526
Hardwood	6,341,346	223,794	111,227	203,636	269,478	475,638	949,282	1,251,617	977,641	885,652	993,381
Total	10,264,337	256,051	160,441	434,640	878,528	1,483,090	1,686,068	1,855,471	1,343,975	1,054,166	1,111,907

Table 19--Average net annual growth of growing stock on timberland, by broad management class, species group, and stand-age class, Piedmont of North Carolina, 1984-1989

Broad management class[a] and species group	All classes	No manageable stand	Stand-age class[a] (years)								
			0-10	11-20	21-30	31-40	41-50	51-60	61-70	71-80	81+
			Thousand cubic feet								
Pine plantation											
Softwood	33,150	--	5,404	12,486	10,554	4,706	--	--	--	--	--
Hardwood	1,635	--	82	527	821	205	--	--	--	--	--
Total	34,785	--	5,486	13,013	11,375	4,911	--	--	--	--	--
Natural pine											
Softwood	88,363	299	1,323	8,376	20,130	28,313	15,122	8,661	4,424	1,436	279
Hardwood	18,561	106	98	1,483	2,898	3,386	4,624	3,405	1,479	803	279
Total	106,924	405	1,421	9,859	23,028	31,699	19,746	12,066	5,903	2,239	558
Oak-pine											
Softwood	16,777	206	283	2,339	2,421	2,218	3,212	2,636	1,796	633	1,033
Hardwood	22,566	285	610	1,635	1,614	2,565	5,222	4,491	2,876	1,234	2,034
Total	39,343	491	893	3,974	4,035	4,783	8,434	7,127	4,672	1,867	3,067
Upland hardwood											
Softwood	8,645	497	425	1,083	694	1,231	1,042	1,610	993	607	463
Hardwood	138,321	6,591	4,728	9,299	8,622	12,838	20,348	25,692	19,078	15,716	15,409
Total	146,966	7,088	5,153	10,382	9,316	14,069	21,390	27,302	20,071	16,323	15,872
Lowland hardwood											
Softwood	502	24	--	17	47	--	48	219	101	46	--
Hardwood	19,389	1,457	48	789	1,869	2,603	3,096	1,926	2,829	2,360	2,412
Total	19,891	1,481	48	806	1,916	2,603	3,144	2,145	2,930	2,406	2,412
All types											
Softwood	147,437	1,026	7,435	24,301	33,846	36,468	19,424	13,126	7,314	2,722	1,775
Hardwood	200,472	8,439	5,566	13,733	15,824	21,597	33,290	35,514	26,262	20,113	20,134
Total	347,909	9,465	13,001	38,034	49,670	58,065	52,714	48,640	33,576	22,835	21,909

[a]Classifications at the end of the remeasurement period.

Table 20--Average annual removals of growing stock on timberland, by broad management class, species group, and stand-age class, Piedmont of North Carolina, 1984-1989

Broad management class[a] and species group	All classes	No manageable stand	Stand-age class[a] (years)								
			0-10	11-20	21-30	31-40	41-50	51-60	61-70	71-80	81+
			Thousand cubic feet								
Pine plantation											
Softwood	14,793	--	--	3,635	11,158	--	--	--	--	--	--
Hardwood	216	--	--	131	85	--	--	--	--	--	--
Total	15,009	--	--	3,766	11,243	--	--	--	--	--	--
Natural pine											
Softwood	101,816	868	726	4,155	21,960	18,633	26,361	12,284	12,408	1,866	2,555
Hardwood	12,558	--	--	65	899	1,346	3,150	2,904	4,024	119	51
Total	114,374	868	726	4,220	22,859	19,979	29,511	15,188	16,432	1,985	2,606
Oak-pine											
Softwood	14,670	1,443	180	273	--	1,623	3,155	3,558	953	3,346	139
Hardwood	12,691	1,288	197	135	--	2,128	1,889	3,797	178	3,079	--
Total	27,361	2,731	377	408	--	3,751	5,044	7,355	1,131	6,425	139
Upland hardwood											
Softwood	8,014	368	290	361	541	1,410	1,193	1,561	839	681	770
Hardwood	91,965	1,597	802	872	8,277	7,280	11,140	20,871	11,312	14,092	15,722
Total	99,979	1,965	1,092	1,233	8,818	8,690	12,333	22,432	12,151	14,773	16,492
Lowland hardwood											
Softwood	1,062	--	--	--	--	--	119	540	--	403	--
Hardwood	11,718	623	--	--	909	851	1,102	5,767	2,466	--	--
Total	12,780	623	--	--	909	851	1,221	6,307	2,466	403	--
All types											
Softwood	140,355	2,679	1,196	8,424	33,659	21,666	30,828	17,943	14,200	6,296	3,464
Hardwood	129,148	3,508	999	1,203	10,170	11,605	17,281	33,339	17,980	17,290	15,773
Total	269,503	6,187	2,195	9,627	43,829	33,271	48,109	51,282	32,180	23,586	19,237

[a]Classifications before timber removals.

Table 21--Merchantable volume of live trees and growing stock on timberland, by forest-type and species groups, Piedmont of North Carolina, 1990

Forest-type group	Live trees					Growing stock				
	All species	Pine	Other softwood	Soft hardwood	Hard hardwood	All species	Pine	Other softwood	Soft hardwood	Hard hardwood
	Thousand cubic feet									
White pine-hemlock	24,309	9,732	7,483	3,991	3,103	22,444	9,732	7,483	3,991	1,238
Spruce-fir	--	--	--	--	--	--	--	--	--	--
Longleaf-slash pine	--	--	--	--	--	--	--	--	--	--
Loblolly-shortleaf pine	3,470,170	2,988,009	26,358	281,881	173,922	3,422,059	2,980,295	25,108	269,977	146,679
Oak-pine	1,279,603	522,514	26,508	339,244	391,337	1,229,797	521,446	26,508	323,534	358,309
Oak-hickory	5,200,179	304,331	33,044	2,054,857	2,807,947	4,932,468	303,396	28,140	1,958,975	2,641,957
Oak-gum-cypress	449,378	16,078	1,635	286,233	145,432	411,550	16,078	1,259	260,579	133,634
Elm-ash-cottonwood	273,730	2,962	584	158,527	111,657	246,019	2,962	584	140,863	101,610
Maple-beech-birch	--	--	--	--	--	--	--	--	--	--
All types	10,697,369	3,843,626	95,612	3,124,733	3,633,398	10,264,337	3,833,909	89,082	2,957,919	3,383,427

Table 22--Area of timberland treated or disturbed annually and retained in timberland, by treatment or disturbance and ownership class, Piedmont of North Carolina, 1984 to 1990

Treatment or disturbance	All ownerships	Ownership class			
		Public	Forest industry	Forest industry-leased	Other private
		Acres[a]			
Final harvest	72,161	1,026	5,308	390	65,437
Partial harvest[b]	19,651	--	--	232	19,419
Commercial thinning	7,608	--	1,109	438	6,061
Other stand improvement	5,871	389	--	--	5,482
Site preparation	16,359	741	2,322	1,006	12,290
Artificial regeneration[c]	22,481	167	2,910	1,006	18,398
Natural regeneration[c]	82,173	1,393	2,073	--	78,707
Other treatment	28,700	96	--	--	28,604
Natural disturbance	175,899	2,107	3,929	616	169,247

[a]Since some acres experience more than one treatment or disturbance, there are no column totals.

[b]Includes high grading and some selective cutting.

[c]Includes establishment of trees for timber production on forest and nonforest land.

Table 23--Area of timberland treated or disturbed annually and retained in timberland, by treatment or disturbance and broad management class, Piedmont of North Carolina, 1984 to 1990

Treatment or disturbance	All classes	Broad management class[a]				
		Pine plantation	Natural pine	Oak-pine	Upland hardwood	Lowland hardwood
		Acres[b]				
Final harvest	72,161	2,842	27,544	8,601	30,147	3,027
Partial harvest[c]	19,651	--	6,886	4,940	7,047	778
Commercial thinning	7,608	3,429	4,179	--	--	--
Other stand improvement	5,871	389	3,176	1,203	1,103	--
Site preparation	16,359	471	7,467	935	6,885	601
Other treatment	28,700	--	5,767	3,988	18,407	538
Natural disturbance	175,899	6,104	55,002	24,217	80,093	10,483

[a]Classification before treatment or disturbance.

[b]Since some acres experience more than one treatment or disturbance, there are no column totals.

[c]Includes high grading and some selective cutting.

Table 24--Area of timberland regenerated annually, by type of regeneration and broad management class, Piedmont of North Carolina, 1984 to 1990

Type of regeneration	All classes	Broad management class[a]				
		Pine plantation	Natural pine	Oak-pine	Upland hardwood	Lowland hardwood
		Acres				
Artificial regeneration following harvest	12,232	7,923	--	4,309	--	--
Natural regeneration following harvest	41,158	--	3,430	10,670	27,058	--
Other artificial regeneration on forest land	4,029	4,029	--	--	--	--
Other natural regeneration on forest land	26,165	--	8,335	4,118	13,712	--
Artificial regeneration on nonforest land	6,220	6,220	--	--	--	--
Natural reversion of nonforest land	14,850	--	7,559	3,061	3,618	612
Total	104,654	18,172	19,324	22,158	44,388	612

[a]Classification after regeneration.

Table 25--Area of timberland, by treatment opportunity and broad management classes, Piedmont of North Carolina, 1990

Treatment opportunity class	All classes	Broad management class				
		Pine plantation	Natural pine	Oak-pine	Upland hardwood	Lowland hardwood
		Acres				
Salvage	87,011	--	27,783	18,824	40,404	--
Harvest	542,943	--	83,620	60,764	343,511	55,048
Commercial thinning	358,389	60,976	269,350	10,435	10,371	7,257
Other stand improvement	465,442	17,472	110,458	76,531	243,433	17,548
Stand conversion	52,956	--	3,952	7,154	41,850	--
Regeneration	367,095	3,647	38,474	29,775	234,577	60,622
Stands in relatively good condition	3,664,403	324,000	892,903	577,934	1,687,462	182,104
Adverse sites[a]	212,884	--	7,977	22,612	171,003	11,292
All classes	5,751,123	406,095	1,434,517	804,029	2,772,611	333,871

[a]Areas where management opportunities are severely limited because of steep slopes or poor drainage.

Table 26--Area of timberland, by treatment opportunity and ownership classes, Piedmont of North Carolina, 1990

Treatment opportunity class	All ownerships	Ownership class			
		Public	Forest industry	Forest industry-leased	Other private
			Acres		
Salvage	87,011	--	1,007	--	86,004
Harvest	542,943	28,486	17,698	--	496,759
Commercial thinning	358,389	6,918	9,819	953	340,699
Other stand improvement	465,442	9,866	11,530	945	443,101
Stand conversion	52,956	--	4,400	--	48,556
Regeneration	367,095	9,319	22,284	--	335,492
Stands in relatively good condition	3,664,403	104,395	145,453	27,889	3,386,666
Adverse sites[a]	212,884	4,355	11,009	--	197,520
All classes	5,751,123	163,339	223,200	29,787	5,334,797

[a]Areas where management opportunities are severely limited because of steep slopes or poor drainage.

Table 27--Merchantable volume of live trees and growing stock on timberland, by ownership class and species group, Piedmont of North Carolina, 1990

Ownership class	Live trees					Growing stock				
	All species	Pine	Other softwood	Soft hardwood	Hard hardwood	All species	Pine	Other softwood	Soft hardwood	Hard hardwood
	Thousand cubic feet									
National forest	79,128	27,188	109	13,838	37,993	74,611	27,021	109	12,281	35,200
Other public	375,098	155,609	4,243	118,180	97,066	359,298	155,356	3,129	111,090	89,723
Forest industry	304,621	166,316	2,527	50,862	84,916	292,903	166,316	2,527	45,780	78,280
Forest industry-leased	13,458	12,415	--	1,043	--	13,458	12,415	--	1,043	--
Other private	9,925,064	3,482,098	88,733	2,940,810	3,413,423	9,524,067	3,472,801	83,317	2,787,725	3,180,224
All ownerships	10,697,369	3,843,626	95,612	3,124,733	3,633,398	10,264,337	3,833,909	89,082	2,957,919	3,383,427

Table 28--Volume of sawtimber on timberland, by ownership class and species group, Piedmont of North Carolina, 1990

Ownership class	Small sawtimber[a]					Large sawtimber[b]				
	All species	Pine	Other softwood	Soft hardwood	Hard hardwood	All species	Pine	Other softwood	Soft hardwood	Hard hardwood
	Thousand board feet									
National forest	105,571	49,448	--	10,084	46,039	156,956	53,497	--	28,757	74,702
Other public	594,270	357,512	--	134,437	102,321	618,484	257,763	--	195,716	165,005
Forest industry	350,675	256,949	5,787	24,019	63,920	288,737	66,175	4,425	84,783	133,354
Forest industry-leased	8,351	8,351	--	--	--	--	--	--	--	--
Other private	14,849,927	8,012,079	121,289	3,004,542	3,712,017	14,226,267	2,515,339	95,447	5,580,402	6,035,079
All ownerships	15,908,794	8,684,339	127,076	3,173,082	3,924,297	15,290,444	2,892,774	99,872	5,889,658	6,408,140

[a]Volume of sawtimber trees less than 15.0 inches at d.b.h.

[b]Volume of sawtimber trees 15.0 inches and larger at d.b.h.

Table 29--Average net annual growth and removals of growing stock on timberland, by ownership class and species group, Piedmont of North Carolina, 1984-1989

Ownership class	Net annual growth					Annual timber removals				
	All species	Pine	Other softwood	Soft hardwood	Hard hardwood	All species	Pine	Other softwood	Soft hardwood	Hard hardwood
	Thousand cubic feet									
National forest	2,336	1,043	19	386	888	1,022	298	--	67	657
Other public	9,708	4,105	112	2,974	2,517	9,078	8,430	--	398	250
Forest industry	16,726	11,656	52	2,319	2,699	10,495	6,662	--	1,408	2,425
Forest industry-leased	2,362	2,233	--	129	--	71	--	71	--	--
Other private	316,777	124,503	3,714	95,960	92,600	248,837	120,907	3,987	57,581	66,362
All ownerships	347,909	143,540	3,897	101,768	98,704	269,503	136,297	4,058	59,454	69,694

Table 30--Average net annual growth and removals of sawtimber on timberland, by ownership class and species group, Piedmont of North Carolina, 1984-1989

Ownership class	Net annual growth					Annual timber removals				
	All species	Pine	Other softwood	Soft hardwood	Hard hardwood	All species	Pine	Other softwood	Soft hardwood	Hard hardwood
	Thousand board feet									
National forest	9,145	4,328	--	1,255	3,562	4,625	1,930	--	247	2,448
Other public	47,382	23,228	722	13,053	10,379	31,061	29,966	--	--	1,095
Forest industry	44,729	30,431	263	4,574	9,461	26,650	15,925	--	3,886	6,839
Forest industry-leased	6,950	6,950	--	--	--	--	--	--	--	--
Other private	1,298,598	544,169	13,153	357,269	384,007	883,196	444,319	9,458	191,928	237,491
All ownerships	1,406,804	609,106	14,138	376,151	407,409	945,532	492,140	9,458	196,061	247,873

Table 31--Volume of timber on timberland, by class of timber and species group, Piedmont of North Carolina, 1990

Class of timber	All species	Pine	Other softwood	Soft hardwood	Hard hardwood
			Thousand cubic feet		
Sawtimber trees					
Saw-log portion	5,948,800	2,257,173	40,707	1,637,329	2,013,591
Upper-stem portion[a]	962,492	293,053	4,896	292,284	372,259
Total	6,911,292	2,550,226	45,603	1,929,613	2,385,850
Poletimber trees	3,353,045	1,283,683	43,479	1,028,306	997,577
All growing-stock trees	10,264,337	3,833,909	89,082	2,957,919	3,383,427
Rough trees					
Sawtimber size	120,069	2,306	3,612	52,576	61,575
Poletimber size	260,921	6,945	2,002	85,776	166,198
Total	380,990	9,251	5,614	138,352	227,773
Rotten trees					
Sawtimber size	43,946	466	916	22,497	20,067
Poletimber size	8,096	--	--	5,965	2,131
Total	52,042	466	916	28,462	22,198
Salvable dead trees					
Sawtimber size	18,393	8,578	167	2,338	7,310
Poletimber size	13,504	5,939	243	2,997	4,325
Total	31,897	14,517	410	5,335	11,635
Total, all timber	10,729,266	3,858,143	96,022	3,130,068	3,645,033

[a]Includes cull sections in the saw-log portion.

Table 32--Number of live trees on timberland, by species and diameter class, Piedmont of North Carolina, 1990

Species	All classes	Diameter class (inches at breast height)											
		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	1,429	538	514	163	157	20	--	37	--	--	--	--	--
Slash pine	--	--	--	--	--	--	--	--	--	--	--	--	--
Shortleaf pine	176,865	30,240	41,741	35,234	31,315	21,035	10,673	4,215	1,831	480	66	35	--
Loblolly pine	352,199	125,764	72,987	61,082	41,737	23,400	13,755	7,085	3,738	1,441	796	396	18
Pond pine	--	--	--	--	--	--	--	--	--	--	--	--	--
Virginia pine	340,204	127,342	84,596	53,323	38,133	23,257	9,916	2,909	597	107	24	--	--
Pitch pine	1,710	--	237	427	272	391	253	--	93	17	--	20	--
Table Mountain pine	733	--	--	486	160	58	--	29	--	--	--	--	--
Spruce pine	--	--	--	--	--	--	--	--	--	--	--	--	--
Sand pine	--	--	--	--	--	--	--	--	--	--	--	--	--
Eastern white pine	8,573	3,768	2,027	1,568	448	234	193	106	46	64	40	79	--
Eastern hemlock	3,068	2,112	480	273	148	--	38	--	--	17	--	--	--
Spruce and fir	--	--	--	--	--	--	--	--	--	--	--	--	--
Baldcypress	--	--	--	--	--	--	--	--	--	--	--	--	--
Pondcypress	--	--	--	--	--	--	--	--	--	--	--	--	--
Cedars	149,508	105,203	30,806	8,522	3,094	1,336	278	220	37	--	--	--	12
Total softwoods	1,034,289	394,967	233,388	161,078	115,464	69,731	35,106	14,601	6,342	2,126	926	530	30
Hardwood													
Select white oaks	192,699	93,255	34,828	19,552	13,791	9,937	8,250	5,757	3,360	1,751	992	1,130	96
Select red oaks	49,170	24,722	9,342	4,841	2,777	2,279	1,580	1,315	974	538	378	409	15
Chestnut oak	51,271	21,195	9,025	6,195	5,261	3,416	2,334	1,882	928	530	221	278	6
Other white oaks	42,099	16,247	7,824	6,907	4,627	2,192	1,948	1,254	646	251	93	100	10
Other red oaks	211,228	124,743	30,241	17,019	12,856	8,951	6,484	4,906	2,531	1,613	919	879	86
Hickory	166,922	101,944	26,231	15,371	8,426	6,111	3,456	2,678	1,314	773	392	217	9
Yellow birch	436	--	240	196	--	--	--	--	--	--	--	--	--
Hard maple	18,261	14,362	2,724	245	441	307	98	26	41	17	--	--	--
Soft maple	611,847	445,261	95,298	32,325	17,775	8,943	5,236	3,070	1,767	1,188	426	528	30
Beech	36,747	22,566	5,968	3,049	958	1,258	1,069	531	480	324	196	319	29
Sweetgum	487,609	324,557	91,600	32,908	15,714	10,222	5,453	3,350	1,998	863	529	398	17
Tupelo and blackgum	138,013	104,269	17,557	7,638	4,016	2,211	1,279	558	190	146	65	68	16
Ash	65,110	41,226	8,066	7,162	3,680	2,313	1,069	829	366	181	138	75	5
Cottonwood	--	--	--	--	--	--	--	--	--	--	--	--	--
Basswood	4,161	3,506	234	178	--	66	167	10	--	--	--	--	--
Yellow-poplar	252,959	133,872	43,191	21,412	15,157	12,158	9,638	6,712	4,472	2,782	1,704	1,686	175
Bay and magnolia	6,492	4,371	860	661	448	97	--	55	--	--	--	--	--
Black cherry	136,957	111,472	18,341	4,607	1,586	816	135	--	--	--	--	--	--
Black walnut	5,272	3,361	465	109	391	303	379	113	117	28	--	6	--
Sycamore	5,129	1,056	1,025	765	595	477	298	165	305	180	98	127	38
Black locust	9,133	5,836	847	829	380	489	283	259	107	28	36	39	--
Elm	107,129	74,698	18,648	6,864	3,608	1,376	917	501	339	79	64	35	--
Other eastern hardwoods	994,770	748,415	185,149	43,700	10,182	3,830	1,565	589	589	344	166	236	5
Total hardwoods	3,593,414	2,420,934	607,704	232,533	122,669	77,752	51,638	34,560	20,524	11,616	6,417	6,530	537
All species	4,627,703	2,815,901	841,092	393,611	238,133	147,483	86,744	49,161	26,866	13,742	7,343	7,060	567

Table 33--Number of growing-stock trees on timberland, by species and diameter class, Piedmont of North Carolina, 1990

Species	All classes	Diameter class (inches at breast height)												
		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	1,025	216	432	163	157	20	--	37	--	--	--	--	--
Slash pine	--	--	--	--	--	--	--	--	--	--	--	--	--
Shortleaf pine	171,770	27,495	40,807	33,917	31,238	21,035	10,673	4,193	1,831	480	66	35	--
Loblolly pine	346,346	120,571	72,546	60,976	41,660	23,400	13,719	7,085	3,738	1,441	796	396	18
Pond pine	--	--	--	--	--	--	--	--	--	--	--	--	--
Virginia pine	330,512	121,401	81,662	52,915	37,865	23,139	9,916	2,886	597	107	24	--	--
Pitch pine	1,390	--	237	107	272	391	253	--	93	17	--	20	--
Table Mountain pine	733	--	--	486	160	58	--	29	--	--	--	--	--
Spruce pine	--	--	--	--	--	--	--	--	--	--	--	--	--
Sand pine	--	--	--	--	--	--	--	--	--	--	--	--	--
Eastern white pine	7,934	3,337	1,819	1,568	448	234	193	106	46	64	40	79	--
Eastern hemlock	2,828	1,872	480	273	148	--	38	--	--	17	--	--	--
Spruce and fir	--	--	--	--	--	--	--	--	--	--	--	--	--
Baldcypress	--	--	--	--	--	--	--	--	--	--	--	--	--
Pondcypress	--	--	--	--	--	--	--	--	--	--	--	--	--
Cedars	127,814	87,434	27,843	7,982	2,888	1,285	193	189	--	--	--	--	--
Total softwoods	990,352	362,326	225,826	158,387	114,836	69,562	34,985	14,525	6,305	2,126	926	530	18
Hardwood													
Select white oaks	169,010	74,494	31,639	18,368	13,505	9,937	8,143	5,672	3,339	1,751	992	1,087	83
Select red oaks	43,591	19,879	8,918	4,717	2,660	2,235	1,580	1,315	974	538	364	401	10
Chestnut oak	40,636	13,902	7,383	5,534	4,902	3,211	2,182	1,797	870	425	194	230	6
Other white oaks	35,730	11,659	6,877	6,458	4,524	2,119	1,845	1,227	584	234	93	100	10
Other red oaks	176,757	95,307	26,844	16,335	12,569	8,951	6,188	4,799	2,433	1,607	869	795	60
Hickory	129,799	70,007	22,417	14,537	8,153	6,017	3,419	2,621	1,314	732	368	208	6
Yellow birch	436	--	240	196	--	--	--	--	--	--	--	--	--
Hard maple	12,978	9,832	2,094	245	441	260	60	26	20	--	--	--	--
Soft maple	360,546	236,874	66,545	25,958	14,424	6,897	4,057	2,596	1,488	991	349	347	20
Beech	28,386	15,539	4,820	3,049	958	1,258	997	454	480	296	196	310	29
Sweetgum	396,849	248,492	79,961	31,306	14,784	10,059	5,227	3,278	1,998	835	504	392	13
Tupelo and blackgum	74,209	48,491	12,295	6,006	3,384	1,883	1,174	529	190	130	49	68	10
Ash	45,135	25,315	5,878	6,282	3,230	1,927	971	808	346	181	117	75	5
Cottonwood	--	--	--	--	--	--	--	--	--	--	--	--	--
Basswood	2,289	1,634	234	178	--	66	167	10	--	--	--	--	--
Yellow-poplar	227,019	114,712	38,689	20,193	14,631	12,030	9,478	6,668	4,431	2,751	1,663	1,622	151
Bay and magnolia	3,016	2,100	227	287	250	97	--	55	--	--	--	--	--
Black cherry	82,189	65,756	12,056	2,779	822	641	135	--	--	--	--	--	--
Black walnut	3,974	2,174	465	109	301	303	379	113	117	13	--	--	--
Sycamore	4,126	687	811	602	417	477	298	139	288	164	87	118	38
Black locust	6,587	3,845	625	697	380	396	214	259	88	28	26	29	--
Elm	69,733	41,302	15,723	6,208	3,454	1,279	854	451	298	65	64	35	--
Other eastern hardwoods	36,736	21,111	7,252	3,670	1,648	893	676	470	401	310	119	181	5
Total hardwoods	1,949,731	1,123,112	351,993	173,714	105,437	70,936	48,044	33,287	19,659	11,051	6,054	5,998	446
All species	2,940,083	1,485,438	577,819	332,101	220,273	140,498	83,029	47,812	25,964	13,177	6,980	6,528	464

Table 34--Merchantable volume of live trees on timberland, by species and diameter class, Piedmont of North Carolina, 1990

Species	All classes	Diameter class (inches at breast height)									
		5.0-6.9	7.0-8.9	9.0-10.9	11.0-12.9	13.0-14.9	15.0-16.9	17.0-18.9	19.0-20.9	21.0-28.9	29.0 and larger
	Thousand cubic feet										
Softwood											
Longleaf pine	2,650	539	811	256	--	1,044	--	--	--	--	--
Slash pine	--	--	--	--	--	--	--	--	--	--	--
Shortleaf pine	1,083,183	103,088	227,061	282,974	225,050	130,144	78,847	27,108	5,060	3,851	--
Loblolly pine	1,587,744	164,754	280,456	300,066	280,747	219,163	160,007	80,797	59,578	37,945	4,231
Pond pine	--	--	--	--	--	--	--	--	--	--	--
Virginia pine	1,147,589	189,662	318,470	320,225	205,161	84,733	22,643	5,262	1,433	--	--
Pitch pine	18,181	1,261	1,624	4,069	5,102	--	3,408	730	--	1,987	--
Table Mountain pine	4,279	1,545	1,357	687	--	690	--	--	--	--	--
Spruce pine	--	--	--	--	--	--	--	--	--	--	--
Sand pine	--	--	--	--	--	--	--	--	--	--	--
Eastern white pine	31,709	4,266	2,652	2,288	3,880	2,955	1,606	2,882	2,594	8,586	--
Eastern hemlock	3,105	764	1,034	--	528	--	--	779	--	--	--
Spruce and fir	--	--	--	--	--	--	--	--	--	--	--
Baldcypress	--	--	--	--	--	--	--	--	--	--	--
Pondcypress	--	--	--	--	--	--	--	--	--	--	--
Cedars	60,798	20,714	16,051	12,717	4,280	4,955	1,165	--	--	--	916
Total softwoods	3,939,238	486,593	849,516	923,282	724,748	443,684	267,676	117,558	68,665	52,369	5,147
Hardwood											
Select white oaks	1,029,890	53,740	88,779	124,102	171,220	167,631	136,460	93,728	68,031	111,268	14,931
Select red oaks	269,701	14,119	18,088	28,627	32,797	39,091	39,162	29,270	26,405	39,663	2,479
Chestnut oak	257,968	14,760	32,945	36,664	39,534	46,046	31,719	22,848	12,069	20,689	694
Other white oaks	179,921	18,920	25,988	23,661	31,903	31,224	22,063	11,260	4,839	7,912	2,151
Other red oaks	823,205	46,525	80,438	105,776	115,965	132,227	99,183	83,790	58,853	85,133	15,315
Hickory	456,385	39,928	51,280	73,890	68,991	77,209	54,246	42,378	26,730	20,306	1,427
Yellow birch	469	469	--	--	--	--	--	--	--	--	--
Hard maple	9,852	749	2,652	2,807	1,566	438	886	754	--	--	--
Soft maple	632,835	92,589	109,052	93,567	87,404	74,160	57,160	51,557	23,471	40,155	3,720
Beech	149,771	9,545	5,792	14,175	20,570	14,816	18,579	16,785	13,149	31,393	4,967
Sweetgum	728,841	80,738	101,626	126,127	108,123	100,279	82,461	46,984	37,192	41,681	3,630
Tupelo and blackgum	124,203	17,286	22,063	23,887	21,743	15,035	6,584	6,619	3,383	5,348	2,255
Ash	150,902	19,327	22,740	27,151	20,841	20,987	14,185	9,204	8,524	7,155	788
Cottonwood	--	--	--	--	--	--	--	--	--	--	--
Basswood	4,564	401	--	721	3,192	250	--	--	--	--	--
Yellow-poplar	1,385,198	69,631	109,505	155,428	197,812	202,272	181,387	151,393	117,259	169,146	31,365
Bay and magnolia	6,710	1,790	2,621	1,057	--	1,242	--	--	--	--	--
Black cherry	34,295	13,454	8,947	9,551	2,343	--	--	--	--	--	--
Black walnut	25,007	386	2,715	3,808	7,819	3,452	5,029	1,127	--	671	--
Sycamore	67,704	3,152	3,872	7,070	5,196	4,430	11,133	8,298	5,427	10,865	8,261
Black locust	30,037	1,721	2,493	5,353	4,492	7,145	3,256	1,284	1,856	2,437	--
Elm	109,628	15,399	23,067	17,012	18,310	12,576	12,766	3,540	3,904	3,054	--
Other eastern hardwoods	281,045	92,887	49,663	33,677	24,885	14,512	19,674	16,482	8,696	19,662	907
Total hardwoods	6,758,131	607,516	764,326	914,111	984,706	965,022	795,933	597,301	419,788	616,538	92,890
All species	10,697,369	1,094,109	1,613,842	1,837,393	1,709,454	1,408,706	1,063,609	714,859	488,453	668,907	98,037

Table 35--Volume of growing stock on timberland, by species and diameter class, Piedmont of North Carolina, 1990

Species	All classes	Diameter class (inches at breast height)									
		5.0-6.9	7.0-8.9	9.0-10.9	11.0-12.9	13.0-14.9	15.0-16.9	17.0-18.9	19.0-20.9	21.0-28.9	29.0 and larger
	Thousand cubic feet										
Softwood											
Longleaf pine	2,650	539	811	256	--	1,044	--	--	--	--	--
Slash pine	--	--	--	--	--	--	--	--	--	--	--
Shortleaf pine	1,079,744	100,696	226,480	282,974	225,050	129,678	78,847	27,108	5,060	3,851	--
Loblolly pine	1,586,141	164,587	279,832	300,066	279,935	219,163	160,007	80,797	59,578	37,945	4,231
Pond pine	--	--	--	--	--	--	--	--	--	--	--
Virginia pine	1,143,645	188,432	317,250	319,251	205,161	84,213	22,643	5,262	1,433	--	--
Pitch pine	17,450	530	1,624	4,069	5,102	--	3,408	730	--	1,987	--
Table Mountain pine	4,279	1,545	1,357	687	--	690	--	--	--	--	--
Spruce pine	--	--	--	--	--	--	--	--	--	--	--
Sand pine	--	--	--	--	--	--	--	--	--	--	--
Eastern white pine	31,709	4,266	2,652	2,288	3,880	2,955	1,606	2,882	2,594	8,586	--
Eastern hemlock	3,105	764	1,034	--	528	--	--	779	--	--	--
Spruce and fir	--	--	--	--	--	--	--	--	--	--	--
Baldcypress	--	--	--	--	--	--	--	--	--	--	--
Pondcypress	--	--	--	--	--	--	--	--	--	--	--
Cedars	54,268	19,379	15,384	12,262	2,963	4,280	--	--	--	--	--
Total softwoods	3,922,991	480,738	846,424	921,853	722,619	442,023	266,511	117,558	68,665	52,369	4,231
Hardwood											
Select white oaks	1,019,189	51,314	87,687	124,102	170,102	166,402	135,695	93,728	68,031	108,245	13,883
Select red oaks	267,465	13,989	17,858	28,370	32,797	39,091	39,162	29,270	25,531	39,057	2,340
Chestnut oak	245,739	13,673	32,080	35,464	37,710	44,396	31,068	20,921	11,074	18,659	694
Other white oaks	173,512	17,249	25,659	23,103	30,699	30,660	20,451	10,789	4,839	7,912	2,151
Other red oaks	802,067	45,235	79,601	105,776	112,322	129,538	96,935	83,602	56,828	79,824	12,406
Hickory	446,955	38,570	50,132	72,800	68,354	75,682	54,246	40,452	25,692	19,941	1,086
Yellow birch	469	469	--	--	--	--	--	--	--	--	--
Hard maple	7,898	749	2,652	2,250	1,202	438	607	--	--	--	--
Soft maple	537,277	76,297	93,266	76,614	73,534	66,610	50,588	45,528	20,768	30,628	3,444
Beech	144,895	9,545	5,792	14,175	19,514	13,030	18,579	15,815	13,149	30,329	4,967
Sweetgum	711,964	77,235	96,597	124,897	105,219	98,731	82,461	46,259	36,255	40,914	3,396
Tupelo and blackgum	112,161	14,228	19,484	20,762	20,636	14,279	6,584	6,172	2,999	5,348	1,669
Ash	140,317	17,035	20,598	23,712	19,394	20,970	13,792	9,204	7,669	7,155	788
Cottonwood	--	--	--	--	--	--	--	--	--	--	--
Basswood	4,564	401	--	721	3,192	250	--	--	--	--	--
Yellow-poplar	1,367,209	67,210	107,113	154,450	195,458	201,231	180,760	150,316	115,487	165,427	29,757
Bay and magnolia	5,008	1,022	1,687	1,057	--	1,242	--	--	--	--	--
Black cherry	24,644	9,086	5,588	7,627	2,343	--	--	--	--	--	--
Black walnut	23,503	386	2,174	3,808	7,819	3,452	5,029	835	--	--	--
Sycamore	64,747	2,651	3,199	7,070	5,196	4,392	10,823	7,731	5,143	10,281	8,261
Black locust	27,051	1,511	2,493	4,636	3,642	7,145	2,926	1,284	1,328	2,086	--
Elm	103,014	14,097	22,354	15,572	17,053	12,223	11,654	3,103	3,904	3,054	--
Other eastern hardwoods	111,698	10,458	10,799	9,694	13,015	12,015	15,288	15,469	7,312	16,741	907
Total hardwoods	6,341,346	482,410	686,813	856,660	939,201	941,777	776,648	580,478	406,009	585,601	85,749
All species	10,264,337	963,148	1,533,237	1,778,513	1,661,820	1,383,800	1,043,159	698,036	474,674	637,970	89,980

Table 36--Volume of sawtimber on timberland, by species and diameter class, Piedmont of North Carolina, 1990

Species	All classes	Diameter class (inches at breast height)							
		9.0-10.9	11.0-12.9	13.0-14.9	15.0-16.9	17.0-18.9	19.0-20.9	21.0-28.9	29.0 and larger
		Thousand board feet							
Softwood									
Longleaf pine	6,619	1,003	--	5,616	--	--	--	--	--
Slash pine	--	--	--	--	--	--	--	--	--
Shortleaf pine	3,399,078	1,055,668	1,021,925	665,571	439,104	160,347	31,418	25,045	--
Loblolly pine	5,531,106	1,083,085	1,262,548	1,134,108	901,246	488,172	377,156	253,431	31,360
Pond pine	--	--	--	--	--	--	--	--	--
Virginia pine	2,563,288	1,148,873	867,663	396,602	114,178	27,996	7,976	--	--
Pitch pine	71,036	13,325	22,366	--	18,129	4,143	--	13,073	--
Table Mountain pine	5,986	2,524	--	3,462	--	--	--	--	--
Spruce pine	--	--	--	--	--	--	--	--	--
Sand pine	--	--	--	--	--	--	--	--	--
Eastern white pine	134,961	7,712	16,872	14,694	8,535	16,290	15,497	55,361	--
Eastern hemlock	6,344	--	2,155	--	--	4,189	--	--	--
Spruce and fir	--	--	--	--	--	--	--	--	--
Baldcypress	--	--	--	--	--	--	--	--	--
Pondcypress	--	--	--	--	--	--	--	--	--
Cedars	85,643	49,183	14,377	22,083	--	--	--	--	--
Total softwoods	11,804,061	3,361,373	3,207,906	2,242,136	1,481,192	701,137	432,047	346,910	31,360
Hardwood									
Select white oaks	3,306,233	--	586,341	662,597	599,694	446,558	341,929	587,058	82,056
Select red oaks	887,484	--	110,453	150,728	163,694	131,988	120,412	197,181	13,028
Chestnut oak	671,897	--	123,342	169,522	131,946	95,102	53,070	95,067	3,848
Other white oaks	474,740	--	110,336	130,499	96,203	54,116	25,627	44,745	13,214
Other red oaks	2,584,173	--	391,286	527,108	438,828	408,317	291,885	447,514	79,235
Hickory	1,229,380	--	233,651	306,221	243,951	197,263	131,982	109,790	6,522
Yellow birch	--	--	--	--	--	--	--	--	--
Hard maple	8,601	--	4,325	1,740	2,536	--	--	--	--
Soft maple	1,193,444	--	241,003	253,564	214,702	207,576	99,570	157,620	19,409
Beech	456,469	--	71,583	49,509	72,402	63,008	53,229	125,658	21,080
Sweetgum	1,907,702	--	375,313	423,892	396,622	240,936	201,014	246,795	23,130
Tupelo and blackgum	230,080	--	65,344	55,016	27,811	28,537	14,544	28,550	10,278
Ash	327,354	--	62,777	80,536	59,830	42,822	38,318	38,484	4,587
Cottonwood	--	--	--	--	--	--	--	--	--
Basswood	11,188	--	10,229	959	--	--	--	--	--
Yellow-poplar	5,161,654	--	702,363	874,698	887,706	804,840	660,719	1,024,662	206,666
Bay and magnolia	4,736	--	--	4,736	--	--	--	--	--
Black cherry	7,784	--	7,784	--	--	--	--	--	--
Black walnut	61,600	--	26,511	12,446	19,272	3,371	--	--	--
Sycamore	247,581	--	16,655	16,869	46,382	36,103	25,441	55,479	50,652
Black locust	68,611	--	12,831	26,218	11,034	4,972	5,246	8,310	--
Elm	203,312	--	58,558	47,311	49,431	14,012	18,603	15,397	--
Other eastern hardwoods	351,154	--	45,490	47,035	65,060	69,795	32,991	85,124	5,659
Total hardwoods	19,395,177	--	3,256,175	3,841,204	3,527,104	2,849,316	2,114,580	3,267,434	539,364
All species	31,199,238	3,361,373	6,464,081	6,083,340	5,008,296	3,550,453	2,546,627	3,614,344	570,724

Table 37--Volume of sawtimber on timberland, by species, size class, and tree grade, Piedmont of North Carolina, 1990

Species	All size classes					Trees 15.0 inches d.b.h. and larger				
	All grades	Tree grade				All grades	Tree grade			
		1	2	3	4		1	2	3	4
	Thousand board feet									
Softwood										
Yellow pines[a]	11,577,113	1,544,867	2,002,113	8,030,133	--	2,892,774	760,056	637,178	1,495,540	--
Eastern white pine[b]	134,961	24,782	65,470	44,709	--	95,683	24,782	44,899	26,002	--
Spruce and fir[b]	--	--	--	--	--	--	--	--	--	--
Cypress[c]	--	--	--	--	--	--	--	--	--	--
Other eastern softwoods[b]	91,987	--	7,137	83,875	975	4,189	--	--	4,189	--
Total	11,804,061	1,569,649	2,074,720	8,158,717	975	2,992,646	784,838	682,077	1,525,731	--
Hardwood[c]										
Select white and red oaks	4,193,717	502,362	1,448,673	1,940,687	301,995	2,683,598	502,362	1,206,885	815,700	158,651
Other white and red oaks	3,730,810	351,842	1,054,224	1,927,042	397,702	2,278,717	351,842	842,369	924,768	159,738
Hickory	1,229,380	63,330	396,436	616,459	153,155	689,508	63,330	281,374	283,969	60,835
Yellow birch	--	--	--	--	--	--	--	--	--	--
Hard maple	8,601	--	--	1,740	6,861	2,536	--	--	--	2,536
Sweetgum	1,907,702	252,649	650,154	880,231	124,668	1,108,497	252,649	503,425	280,371	72,052
Ash, walnut, and black cherry	396,738	41,104	138,694	198,525	18,415	206,684	41,104	104,579	52,228	8,773
Yellow-poplar	5,161,654	1,071,401	2,025,231	1,803,324	261,698	3,584,593	1,071,401	1,563,677	799,741	149,774
Other eastern hardwoods	2,766,575	113,563	525,488	1,535,357	592,167	1,743,665	113,563	467,447	781,405	381,250
Total	19,395,177	2,396,251	6,238,900	8,903,365	1,856,661	12,297,798	2,396,251	4,969,756	3,938,182	993,609
All species	31,199,238	3,965,900	8,313,620	17,062,082	1,857,636	15,290,444	3,181,089	5,651,833	5,463,913	993,609

[a]For yellow pines, tree grade is based on "Southern Pine Tree Grades for Yard and Structural Lumber," Research Paper SE-40, published by the Southeastern Forest Experiment Station, Asheville, NC, 1968. Tree grade 4 does not apply to yellow pine.

[b]For other softwoods (excluding cypress), tree grade is based on "Tree Grades for Eastern White Pine," Research Paper NE-214, published by the Northeastern Forest Experiment Station, Radnor, PA, 1971.

[c]For hardwoods and cypress, tree grades 1, 2, and 3 are based on "Hardwood Tree Grades for Factory Lumber," Research Paper NE-333, published by the Northeastern Forest Experiment Station, Radnor, PA, 1976. Grade 4 trees are sawtimber trees not qualifying as tree grades 1, 2, or 3. The butt log of these trees qualify as construction (tie and timber) logs based on "A Guide to Hardwood Log Grading (revised)," General Technical Report NE-1, published by the Northeastern Forest Experiment Station, Radnor, PA, 1971.

Table 38--Cubic volume in the merchantable saw-log portion of sawtimber trees on timberland, by species and diameter class, Piedmont of North Carolina, 1990

Species	All classes	Diameter class (inches at breast height)							
		9.0-10.9	11.0-12.9	13.0-14.9	15.0-16.9	17.0-18.9	19.0-20.9	21.0-28.9	29.0 and larger
		Thousand cubic feet							
Softwood									
Longleaf pine	1,202	207	--	995	--	--	--	--	--
Slash pine	--	--	--	--	--	--	--	--	--
Shortleaf pine	667,698	227,518	204,475	123,429	76,737	26,717	5,009	3,813	--
Loblolly pine	1,028,831	234,426	251,527	207,538	155,104	79,509	58,970	37,568	4,189
Pond pine	--	--	--	--	--	--	--	--	--
Virginia pine	544,498	254,811	183,161	78,538	21,537	5,062	1,389	--	--
Pitch pine	13,715	3,222	4,615	--	3,234	701	--	1,943	--
Table Mountain pine	1,229	565	--	664	--	--	--	--	--
Spruce pine	--	--	--	--	--	--	--	--	--
Sand pine	--	--	--	--	--	--	--	--	--
Eastern white pine	23,053	1,718	3,439	2,748	1,518	2,758	2,506	8,366	--
Eastern hemlock	1,197	--	458	--	--	739	--	--	--
Spruce and fir	--	--	--	--	--	--	--	--	--
Baldcypress	--	--	--	--	--	--	--	--	--
Pondcypress	--	--	--	--	--	--	--	--	--
Cedars	16,457	9,787	2,688	3,982	--	--	--	--	--
Total softwoods	2,297,880	732,254	650,363	417,894	258,130	115,486	67,874	51,690	4,189
Hardwood									
Select white oaks	642,949	--	123,072	136,740	118,941	85,116	63,057	102,609	13,414
Select red oaks	172,624	--	23,519	31,249	32,842	25,357	22,487	35,033	2,137
Chestnut oak	137,423	--	27,037	36,350	27,067	18,788	10,137	17,385	659
Other white oaks	89,667	--	22,151	25,590	18,075	9,813	4,491	7,480	2,067
Other red oaks	486,155	--	79,059	106,083	84,820	75,901	52,612	75,677	12,003
Hickory	238,255	--	48,936	62,165	47,286	36,517	23,618	18,695	1,038
Yellow birch	--	--	--	--	--	--	--	--	--
Hard maple	1,776	--	899	360	517	--	--	--	--
Soft maple	236,324	--	50,384	52,758	42,968	40,120	18,678	28,182	3,234
Beech	98,583	--	14,322	10,585	15,836	13,897	11,751	27,605	4,587
Sweetgum	348,623	--	73,656	81,706	73,234	42,681	34,287	39,697	3,362
Tupelo and blackgum	45,954	--	14,041	11,515	5,608	5,493	2,719	4,978	1,600
Ash	65,439	--	13,444	16,974	12,040	8,312	7,119	6,788	762
Cottonwood	--	--	--	--	--	--	--	--	--
Basswood	2,350	--	2,148	202	--	--	--	--	--
Yellow-poplar	900,084	--	136,162	165,581	160,245	138,802	109,381	160,449	29,464
Bay and magnolia	999	--	--	999	--	--	--	--	--
Black cherry	1,659	--	1,659	--	--	--	--	--	--
Black walnut	13,350	--	5,601	2,742	4,270	737	--	--	--
Sycamore	44,820	--	3,368	3,414	9,093	6,807	4,645	9,567	7,926
Black locust	14,767	--	2,569	5,647	2,434	1,106	1,167	1,844	--
Elm	40,560	--	12,028	9,708	9,853	2,710	3,485	2,776	--
Other eastern hardwoods	68,559	--	9,114	9,513	13,111	13,621	6,752	15,567	881
Total hardwoods	3,650,920	--	663,169	769,881	678,240	525,778	376,386	554,332	83,134
All species	5,948,800	732,254	1,313,532	1,187,775	936,370	641,264	444,260	606,022	87,323

Table 39--Total volume of live trees on timberland, by species and diameter class, Piedmont of North Carolina, 1990

Species	All classes	Diameter class (inches at breast height)											
		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	3,963	119	667	706	998	297	--	1,176	--	--	--	--	--
Slash pine	--	--	--	--	--	--	--	--	--	--	--	--	--
Shortleaf pine	1,336,389	8,193	50,834	141,270	273,836	328,345	257,060	147,472	88,913	30,479	5,675	4,312	--
Loblolly pine	1,978,049	26,881	71,998	232,912	341,885	349,748	321,233	248,341	180,396	90,741	66,768	42,431	4,715
Pond pine	--	--	--	--	--	--	--	--	--	--	--	--	--
Virginia pine	1,526,051	31,171	121,188	251,118	381,241	373,775	236,773	97,253	25,893	6,007	1,632	--	--
Pitch pine	21,882	--	612	1,637	1,951	4,757	5,892	--	3,926	837	--	2,270	--
Table Mountain pine	5,165	--	--	1,994	1,592	793	--	786	--	--	--	--	--
Spruce pine	--	--	--	--	--	--	--	--	--	--	--	--	--
Sand pine	--	--	--	--	--	--	--	--	--	--	--	--	--
Eastern white pine	41,257	774	2,574	6,029	3,188	2,711	4,525	3,423	1,855	3,322	2,993	9,863	--
Eastern hemlock	5,331	673	883	1,025	1,246	--	614	--	--	890	--	--	--
Spruce and fir	--	--	--	--	--	--	--	--	--	--	--	--	--
Baldcypress	--	--	--	--	--	--	--	--	--	--	--	--	--
Pondcypress	--	--	--	--	--	--	--	--	--	--	--	--	--
Cedars	138,439	23,791	33,215	31,347	20,693	15,691	5,175	5,946	1,391	--	--	--	1,190
Total softwoods	5,056,526	91,602	281,971	668,038	1,026,630	1,076,117	831,272	504,397	302,374	132,276	77,068	58,876	5,905
Hardwood													
Select white oaks	1,369,569	22,063	47,438	79,928	116,279	157,247	214,066	208,246	168,778	115,671	83,773	137,349	18,731
Select red oaks	358,650	6,035	15,699	19,965	23,168	35,840	40,711	48,292	48,324	36,028	32,493	48,931	3,164
Chestnut oak	339,240	4,867	13,011	21,052	42,035	45,621	48,596	56,306	38,782	27,984	14,705	25,417	864
Other white oaks	250,200	3,756	12,597	28,470	34,763	30,410	40,547	39,269	27,716	14,133	6,052	9,843	2,644
Other red oaks	1,111,921	28,277	43,930	71,459	106,239	134,105	144,708	163,293	122,150	102,619	72,085	104,113	18,943
Hickory	628,495	19,818	32,651	61,781	67,765	92,735	84,817	93,891	65,550	51,056	32,225	24,459	1,747
Yellow birch	1,051	--	361	690	--	--	--	--	--	--	--	--	--
Hard maple	19,173	3,540	3,227	1,038	3,465	3,481	1,904	529	1,085	904	--	--	--
Soft maple	1,045,057	105,304	150,325	131,842	137,540	114,734	105,620	89,076	68,108	61,725	28,006	48,263	4,514
Beech	200,835	4,615	7,240	14,614	7,704	18,011	25,713	18,364	22,972	20,745	16,181	38,590	6,086
Sweetgum	1,058,067	70,447	110,591	120,486	126,052	149,189	125,339	114,978	94,028	53,389	42,263	47,153	4,152
Tupelo and blackgum	195,538	20,559	21,123	24,874	27,650	29,019	25,931	17,788	7,758	7,799	3,977	6,315	2,745
Ash	202,653	10,454	10,900	27,504	27,844	32,118	24,193	24,158	16,214	10,491	9,753	8,127	897
Cottonwood	--	--	--	--	--	--	--	--	--	--	--	--	--
Basswood	6,586	875	356	536	--	843	3,680	296	--	--	--	--	--
Yellow-poplar	1,680,938	31,965	61,381	92,919	130,321	179,261	225,141	228,656	204,371	170,220	131,596	189,701	35,406
Bay and magnolia	11,304	1,298	1,240	2,703	3,324	1,273	--	1,466	--	--	--	--	--
Black cherry	106,716	36,957	25,878	18,475	11,138	11,492	2,776	--	--	--	--	--	--
Black walnut	31,968	724	1,099	512	3,404	4,610	9,359	4,109	5,958	1,398	--	795	--
Sycamore	81,513	412	1,608	4,139	4,744	8,350	6,090	5,200	12,958	9,632	6,310	12,555	9,515
Black locust	38,994	1,109	742	2,481	3,135	6,622	5,487	8,632	3,928	1,566	2,276	3,016	--
Elm	175,341	15,990	23,314	22,583	28,916	20,572	21,776	14,930	14,991	4,151	4,560	3,558	--
Other eastern hardwoods	770,905	172,263	222,383	139,964	64,949	42,474	30,986	17,760	24,161	20,043	10,681	24,200	1,041
Total hardwoods	9,684,714	561,328	807,094	888,015	970,435	1,118,007	1,187,440	1,155,239	947,832	709,554	496,936	732,385	110,449
All species	14,741,240	652,930	1,089,065	1,556,053	1,997,065	2,194,124	2,018,712	1,659,636	1,250,206	841,830	574,004	791,261	116,354

Table 40--Green weight of forest biomass on timberland, by species and diameter class, Piedmont of North Carolina, 1990

Species	All classes	Diameter class (inches at breast height)											
		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	3,125	99	568	530	764	229	--	935	--	--	--	--	--
Slash pine	--	--	--	--	--	--	--	--	--	--	--	--	--
Shortleaf pine	919,847	4,658	30,813	84,417	186,338	231,362	183,657	105,808	63,778	21,893	4,057	3,066	--
Loblolly pine	1,413,582	13,109	42,478	162,856	247,382	254,131	234,257	181,031	130,224	65,875	48,151	30,729	3,359
Pond pine	--	--	--	--	--	--	--	--	--	--	--	--	--
Virginia pine	1,132,733	27,003	98,313	189,250	276,976	272,483	172,921	71,171	19,030	4,378	1,208	--	--
Pitch pine	14,570	--	530	1,020	1,293	3,219	3,922	--	2,558	559	--	1,469	--
Table Mountain pine	2,956	--	--	1,045	929	484	--	498	--	--	--	--	--
Spruce pine	--	--	--	--	--	--	--	--	--	--	--	--	--
Sand pine	--	--	--	--	--	--	--	--	--	--	--	--	--
Eastern white pine	25,184	302	1,160	3,660	2,289	1,820	2,924	2,218	1,184	2,095	1,818	5,714	--
Eastern hemlock	4,004	414	553	837	1,037	--	511	--	--	652	--	--	--
Spruce and fir	--	--	--	--	--	--	--	--	--	--	--	--	--
Baldcypress	--	--	--	--	--	--	--	--	--	--	--	--	--
Pondcypress	--	--	--	--	--	--	--	--	--	--	--	--	--
Cedars	94,759	14,408	21,235	22,729	15,313	11,330	3,754	4,197	971	--	--	--	822
Total softwoods	3,610,760	59,993	195,650	466,344	732,321	775,058	601,946	365,858	217,745	95,452	55,234	40,978	4,181
Hardwood													
Select white oaks	1,103,693	17,389	35,023	56,482	91,605	124,935	172,077	169,848	138,661	95,807	69,726	115,796	16,344
Select red oaks	287,596	5,082	11,608	14,337	18,891	29,253	33,003	39,284	39,086	29,115	26,087	39,349	2,501
Chestnut oak	265,941	4,454	10,100	15,150	31,822	35,400	37,903	44,558	30,764	22,312	11,963	20,782	733
Other white oaks	199,385	2,692	8,551	19,614	27,058	24,186	33,027	32,817	23,314	11,880	5,261	8,646	2,339
Other red oaks	928,757	21,939	33,091	51,764	85,971	110,270	121,838	139,191	103,919	88,344	62,735	91,778	17,917
Hickory	502,297	17,165	28,493	43,040	51,329	71,962	67,150	76,262	54,004	42,849	27,219	21,200	1,624
Yellow birch	770	--	302	468	--	--	--	--	--	--	--	--	--
Hard maple	16,647	2,992	2,751	858	2,755	3,126	1,718	542	1,071	834	--	--	--
Soft maple	769,536	79,822	106,817	93,402	104,769	86,435	78,719	66,210	50,782	45,064	20,213	34,170	3,133
Beech	160,927	3,729	6,132	8,445	5,761	14,260	20,785	14,923	18,769	17,207	13,416	32,392	5,108
Sweetgum	756,032	47,128	73,549	77,611	89,303	107,339	91,935	85,633	70,750	40,549	32,229	36,689	3,317
Tupelo and blackgum	130,708	16,098	15,634	13,623	17,289	18,377	17,047	12,083	5,365	5,556	2,882	4,661	2,093
Ash	129,456	6,326	6,875	20,178	20,022	20,828	14,877	14,815	9,484	5,893	5,419	4,286	453
Cottonwood	--	--	--	--	--	--	--	--	--	--	--	--	--
Basswood	4,295	586	247	311	--	533	2,423	195	--	--	--	--	--
Yellow-poplar	1,186,583	23,594	40,798	55,799	87,980	124,287	158,577	163,194	147,610	123,287	96,111	138,961	26,385
Bay and magnolia	6,805	816	780	1,435	2,035	816	--	923	--	--	--	--	--
Black cherry	62,032	17,654	17,296	10,611	7,098	7,510	1,863	--	--	--	--	--	--
Black walnut	26,707	602	877	420	2,732	3,877	7,815	3,409	5,035	1,203	--	737	--
Sycamore	59,787	292	1,107	2,138	2,993	5,410	4,309	3,685	9,652	7,393	4,920	10,061	7,827
Black locust	37,287	883	641	2,025	2,910	6,299	5,380	8,272	3,986	1,536	2,330	3,025	--
Elm	113,841	11,668	16,366	13,493	17,981	12,610	13,745	9,758	9,885	2,809	3,099	2,427	--
Other eastern hardwoods	609,128	143,727	184,964	97,663	48,099	31,183	23,483	13,902	19,322	16,292	9,414	20,277	802
Total hardwoods	7,358,210	424,638	602,002	598,867	718,403	838,896	907,674	899,504	741,459	557,930	393,024	585,237	90,576
All species	10,968,970	484,631	797,652	1,065,211	1,450,724	1,613,954	1,509,620	1,265,362	959,204	653,382	448,258	626,215	94,757

Table 41--Average net annual growth and removals of live timber and growing stock on timberland, by species, Piedmont of North Carolina, 1984-1989

Species	Live timber[a]		Growing stock	
	Net annual growth	Annual timber removals	Net annual growth	Annual timber removals
	Thousand cubic feet			
Softwood				
Yellow pines	143,634	136,509	143,540	136,297
Eastern white pine	1,367	2,286	1,367	2,286
Spruce and fir	--	--	--	--
Cypress	--	--	--	--
Other eastern softwoods	2,554	1,772	2,530	1,772
Total softwoods	147,555	140,567	147,437	140,355
Hardwood				
Select white and red oaks	39,677	29,685	39,548	28,749
Other white and red oaks	37,370	26,863	36,961	25,880
Hickory	11,205	11,142	11,096	10,506
Yellow birch	18	--	18	--
Hard maple	210	260	181	235
Sweetgum	24,490	16,671	24,152	16,118
Ash, walnut, and black cherry	7,209	2,258	6,867	1,830
Yellow-poplar	47,683	29,486	47,452	29,194
Tupelo and blackgum	2,211	1,877	2,125	1,352
Bay and magnolia	194	--	174	--
Other eastern hardwoods	36,632	20,104	31,898	15,284
Total hardwoods	206,899	138,346	200,472	129,148
All species	354,454	278,913	347,909	269,503

[a]Merchantable portion only.

Table 42--Average net annual growth and removals of sawtimber on timberland, by species, Piedmont of North Carolina, 1984-1989

Species	Net annual growth	Annual timber removals
	Thousand board feet	
Softwood		
Yellow pines	609,106	492,140
Eastern white pine	6,803	7,185
Spruce and fir	--	--
Cypress	--	--
Other eastern softwoods	7,335	2,273
Total softwoods	623,244	501,598
Hardwood		
Select white and red oaks	175,618	101,755
Other white and red oaks	149,465	94,438
Hickory	44,846	39,739
Yellow birch	--	--
Hard maple	392	979
Sweetgum	80,479	48,179
Ash, walnut, and black cherry	17,172	3,810
Yellow-poplar	222,006	112,416
Tupelo and blackgum	5,458	3,671
Bay and magnolia	798	--
Other eastern hardwoods	87,326	38,947
Total hardwoods	783,560	443,934
All species	1,406,804	945,532

Table 43--Average annual removals of growing stock on timberland, by species and diameter class, Piedmont of North Carolina, 1984-1989

Species	All classes	Diameter class (inches at breast height)									
		5.0-6.9	7.0-8.9	9.0-10.9	11.0-12.9	13.0-14.9	15.0-16.9	17.0-18.9	19.0-20.9	21.0-28.9	29.0 and larger
		Thousand cubic feet									
Softwood											
Yellow pines	136,297	11,922	19,634	28,501	27,914	22,170	14,810	6,791	2,892	1,663	--
Eastern white pine	2,286	373	447	438	288	117	--	--	390	233	--
Spruce and fir	--	--	--	--	--	--	--	--	--	--	--
Cypress	--	--	--	--	--	--	--	--	--	--	--
Other eastern softwoods	1,772	602	609	561	--	--	--	--	--	--	--
Total softwoods	140,355	12,897	20,690	29,500	28,202	22,287	14,810	6,791	3,282	1,896	--
Hardwood											
Select white and red oaks	28,749	1,292	1,688	3,195	4,181	3,913	3,822	4,284	1,463	3,072	1,839
Other white and red oaks	25,880	1,277	2,104	1,931	4,397	4,026	3,075	2,950	1,491	3,731	898
Hickory	10,506	459	369	848	1,931	1,262	2,166	1,063	1,388	1,020	--
Yellow birch	--	--	--	--	--	--	--	--	--	--	--
Hard maple	235	--	--	--	--	116	119	--	--	--	--
Sweetgum	16,118	1,113	2,681	2,104	2,983	1,273	1,682	1,408	1,652	1,222	--
Ash, walnut, and black cherry	1,830	264	231	354	435	242	--	--	178	--	126
Yellow-poplar	29,194	1,086	2,381	2,392	4,943	4,248	5,728	3,244	2,300	2,872	--
Tupelo and blackgum	1,352	192	71	103	467	235	284	--	--	--	--
Bay and magnolia	--	--	--	--	--	--	--	--	--	--	--
Other eastern hardwoods	15,284	1,501	2,188	2,244	2,739	1,033	1,735	993	697	2,005	149
Total hardwoods	129,148	7,184	11,713	13,171	22,076	16,348	18,611	13,942	9,169	13,922	3,012
All species	269,503	20,081	32,403	42,671	50,278	38,635	33,421	20,733	12,451	15,818	3,012

Table 44--Average annual mortality of live timber, growing stock, and sawtimber on timberland, by species, Piedmont of North Carolina, 1984-1989

Species	Live timber[a]	Growing stock	Sawtimber
	Thousand cubic feet		Thousand board feet
Softwood			
Yellow pines	49,469	49,044	128,071
Eastern white pine	193	193	711
Spruce and fir	--	--	--
Cypress	--	--	--
Other eastern softwoods	1,540	1,193	2,063
Total softwoods	51,202	50,430	130,845
Hardwood			
Select white and red oaks	6,451	6,210	19,455
Other white and red oaks	18,211	16,323	45,041
Hickory	4,656	4,016	12,466
Yellow birch	--	--	--
Hard maple	89	--	--
Sweetgum	2,110	1,691	2,151
Ash, walnut, and black cherry	1,917	1,298	3,296
Yellow-poplar	6,648	6,440	13,232
Tupelo and blackgum	476	309	310
Bay and magnolia	--	--	--
Other eastern hardwoods	12,189	6,565	14,374
Total hardwoods	52,747	42,852	110,325
All species	103,949	93,282	241,170

[a]Merchantable portion only.

Table 45--Change in number of live trees on timberland, by species group, survey completion date, and diameter class, Piedmont of North Carolina

Species group and year	All classes	Diameter class (inches at breast height)							
		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 and larger
		Thousand trees							
Yellow pine									
1984	895,180	277,612	229,608	153,408	113,482	67,143	30,880	14,672	8,375
1990	873,140	283,884	200,075	150,715	111,774	68,161	34,597	14,275	9,659
Change	-22,040	+6,272	-29,533	-2,693	-1,708	+1,018	+3,717	-397	+1,284
Other softwood									
1984	167,672	117,869	32,634	10,327	4,042	1,772	525	194	309
1990	161,149	111,083	33,313	10,363	3,690	1,570	509	326	295
Change	-6,523	-6,786	+679	+36	-352	-202	-16	+132	-14
Hardwood									
1984	3,445,790	2,306,091	594,390	232,995	120,981	71,612	50,146	30,616	38,959
1990	3,593,414	2,420,934	607,704	232,533	122,669	77,752	51,638	34,560	45,624
Change	+147,624	+114,843	+13,314	-462	+1,688	+6,140	+1,492	+3,944	+6,665

Table 46--Land area, by land use class, major forest type, and survey completion date, Piedmont of North Carolina

Land use class	Survey completion date			Change 1984-1990
	1975	1984	1990	
	Acres			
Forest land				
Timberland:				
Pine and oak-pine types	2,923,225	2,609,254	2,644,641	+35,387
Hardwood types	3,104,768	3,168,295	3,106,482	-61,813
Total	6,027,993	5,777,549	5,751,123	-26,426
Reserved timberland	20,242	32,085	33,547	+1,462
Woodland	--	--	--	--
Total forest land	6,048,235	5,809,634	5,784,670	-24,964
Nonforest land				
Cropland	2,187,494	2,102,212	1,954,220	-147,992
Pasture and range	966,306	861,087	891,520	+30,433
Other	1,245,516	1,562,329	1,781,062	+218,733
Total	4,399,316	4,525,628	4,626,802	+101,174
All land[a]	10,447,551	10,335,262	10,411,472	+76,210

[a]Excludes all water areas.

Table 47--Volume[a] of sawtimber, growing stock, and live timber on timberland, by species group, survey completion date, and diameter class, Piedmont of North Carolina

Species group and year	All classes	Diameter class (inches at breast height)								
		5.0-6.9	7.0-8.9	9.0-10.9	11.0-12.9	13.0-14.9	15.0-16.9	17.0-18.9	19.0-20.9	21.0 and larger
					SAWTIMBER (in thousand board feet)					
Softwood										
1975	10,029,821	--	--	3,121,752	2,664,208	1,914,776	1,115,301	605,736	297,926	310,122
1984	11,060,013	--	--	3,192,377	2,877,567	2,356,002	1,286,495	735,628	354,244	257,700
1990	11,804,061	--	--	3,361,373	3,207,906	2,242,136	1,481,192	701,137	432,047	378,270
Hardwood										
1975	14,564,736	--	--	--	3,076,999	3,091,567	2,709,401	2,041,783	1,220,383	2,424,603
1984	17,318,208	--	--	--	3,354,714	3,579,645	3,234,261	2,481,325	1,669,623	2,998,640
1990	19,395,177	--	--	--	3,256,175	3,841,204	3,527,104	2,849,316	2,114,580	3,806,798
					GROWING STOCK (in thousand cubic feet)					
Softwood										
1975	3,845,967	656,290	898,082	880,763	614,529	388,137	206,670	104,484	48,850	48,162
1984	3,879,229	520,078	853,766	900,662	663,749	477,564	238,413	126,892	58,085	40,020
1990	3,922,991	480,738	846,424	921,853	722,619	442,023	266,511	117,558	68,665	56,600
Hardwood										
1975	5,377,121	509,267	693,410	843,416	891,389	761,456	594,531	417,859	234,943	430,850
1984	5,905,437	484,369	690,113	805,688	971,875	881,672	709,705	507,786	321,409	532,820
1990	6,341,346	482,410	686,813	856,660	939,201	941,777	776,648	580,478	406,009	671,350
					LIVE TIMBER[b] (in thousand cubic feet)					
Softwood										
1975	3,864,830	662,128	902,295	883,895	615,977	389,131	206,670	104,484	48,850	51,400
1984	3,897,607	525,622	857,655	903,909	665,436	478,875	238,413	126,892	58,085	42,720
1990	3,939,238	486,593	849,516	923,282	724,748	443,684	267,676	117,558	68,665	57,516
Hardwood										
1975	5,833,504	667,923	776,535	917,135	929,680	786,759	613,565	433,491	244,874	463,542
1984	6,379,594	636,829	773,402	876,653	1,013,904	911,161	732,535	526,763	335,057	573,290
1990	6,758,131	607,516	764,326	914,111	984,706	965,022	795,933	597,301	419,788	709,428

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

[b]Merchantable volume.

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Brown, Mark J. 1991. Forest statistics for the Piedmont of North Carolina, 1990. Resour. Bull. SE-117. Asheville, NC: U.S. Department of Agriculture, Forest Service, Southeastern Forest Experiment Station. 53 pp.

Since 1984, area of timberland in the Piedmont of North Carolina decreased less than 1 percent and now totals under 5.8 million acres. Nonindustrial private owners control 93 percent of the region's timberland, the highest percentage in the Southeast. About 32 percent of the timberland in the unit is classified as a pine forest type. Artificial regeneration averaged 22,000 acres annually, up by 27 percent. Volume of softwood growing stock increased 1 percent to 3.9 billion cubic feet, while hardwood growing-stock volume rose 7 percent to 6.3 billion cubic feet. Net annual growth of softwoods increased 10 percent to 147 million cubic feet, whereas net annual growth for hardwoods dropped 3 percent to 201 million cubic feet. Annual softwood removals increased 12 percent to 140 million cubic feet, and hardwood removals increased 8 percent to 129 million cubic feet. Mortaility increased for both softwoods and hardwoods, largely as a result of Hurricane Hugo, and totaled 93 million cubic feet annually.

KEYWORDS: Timberland, land use trends, timberland ownership, timber volume, timber growth, timber removals.

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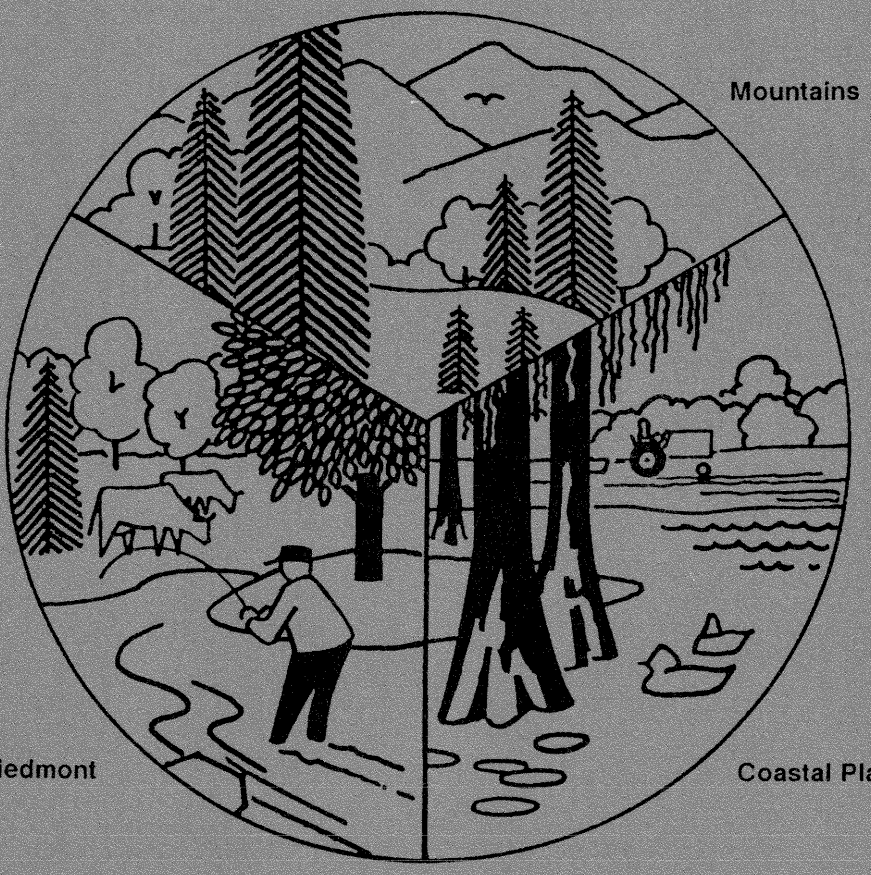

Southeastern Forest Experiment Station

Established 1921

The Southeastern Forest Experiment Station, headquartered in Asheville, North Carolina, is one of the eight regional Experiment Stations, and the Forest Products Laboratory, that make up the Forest Service research organization.

RESEARCH MISSION:

To acquire the knowledge, develop the technology, and disseminate the research findings required to manage the Southeast's forest resources in ways that satisfy demands of goods and services while maintaining a quality environment.

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