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Forest Service

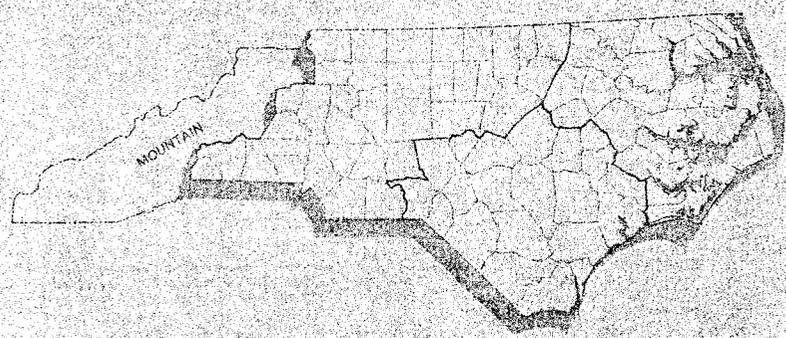
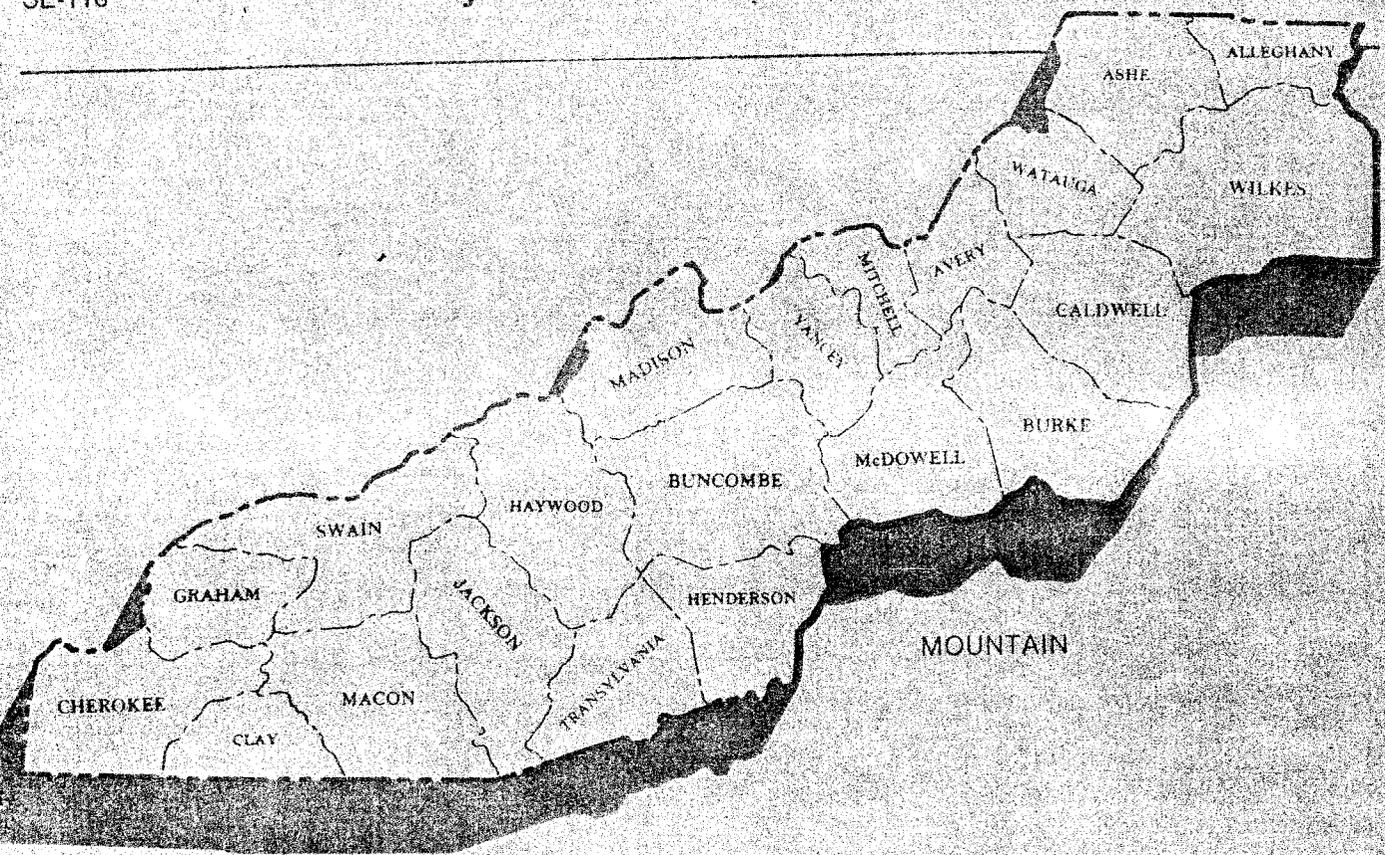


Southeastern Forest
Experiment Station

Resource Bulletin
SE-118

Forest Statistics for the Mountains of North Carolina, 1990

Tony G. Johnson



**Forest Statistics for the
Mountains of North Carolina,
1990**

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Asheville, North Carolina

Foreword

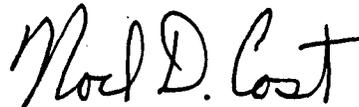
This report highlights the principal findings of the sixth forest survey of the Mountains of North Carolina. Field work began in August 1990 and was completed in November 1990. Five previous surveys, completed in 1938, 1955, 1964, 1974, and 1984, provide statistics for measuring changes and trends over the past 52 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 **Range-**land 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 **21-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 the Northern Coastal Plain of North Carolina. A similar report for the Piedmont 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 1.9-percent upward adjustment in the acreage of timberland for 1984. These revisions were necessary due to the incomplete and poor-quality aerial photography available for 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 Mountains of North
Carolina--

- 'area of timberland declined by 29,000 acres, or less than 1 percent. Timberland currently accounts for 3.9 million acres, or 70 percent of the total land area in this **21-county** region. Land use changes occurred on more than 47,000 acres. Almost 38,000 acres of timberland were diverted to other land uses, while more than 9,000 acres were added to the timberland base. All of the additions came from natural seeding on former agricultural land. Of the diversions, more than 24,000 acres, or 64 percent, were reclassified as reserved timberland.

- area of timberland owned by nonindustrial private forest (NIPF) landowners has declined nearly 16,000 acres, or just under 1 percent. NIPF owners currently control 2.8 million acres, or 71 percent of the timberland in the region. Within the NIPF category, **farmer-owned** timberland decreased 22 percent, or nearly 130,000 acres. Since 1955,

farm ownership has fallen from 2.3 million acres to the current total of 0.5 million acres of timberland. In contrast to farm ownership, timberland held by other individuals increased nearly 6 percent to 2.0 million acres. Timberland held by other corporate owners increased 2 percent to 373,000 acres. Timberland owned or leased by forest industry declined almost 8 percent and currently totals 104,000 acres. The area of timberland in public ownership remained steady at 1.0 million acres. Public ownership accounts for 26 percent of the timberland in this area, with the Pisgah and Nantahala National Forests making up **almost** 89 percent of this category.

- area of timberland classified as a hardwood forest type declined nearly 69,000 acres, or more than 2 percent. However, at 3.0 million acres, hardwood forest types make up nearly 75 percent of the timberland in this mountainous region. Area of oak-hickory--the predominant forest type in the region--declined almost 4 percent to 2.8 million acres. In contrast, acreage in oak-pine increased 15 percent to 478,000 acres. White pine-hemlock, the dominant softwood forest type, increased nearly 10 percent to more than 225,000 acres.

- nearly 28,000 acres were harvested annually and retained in timberland. This represents a 20-percent increase, or nearly 4,600 acres more per year, over that harvested between 1974 and 1984. Of the harvested acres, 65 percent were on NIPF land, 28 percent on **public-owned** land, and the remaining 7 percent on land controlled by forest industry. Hardwood stands accounted for 68 percent of the total annual harvest. Natural pine stands made up 27 percent and **oak-pine** stands 5 percent of the acreage harvested annually. In addition to final harvests, some form of partial harvests or intermediate cutting occurred on

11,000 acres annually. In addition, natural disturbances such as weather, fire, insects, and disease damaged almost 107,000 acres yearly.

- the annual rate of stand regeneration by both natural and artificial means increased 20 percent from 22,000 to 27,000 acres per year. Natural regeneration accounted for 88 percent of the newly regenerated stands, or nearly 24,000 acres per year. More than 84 percent of the regenerated stands are currently classified as a hardwood or **oak-pine** stands. By ownership, NIPF land accounted for 64 percent of the regenerated acreage, public land for 29 percent, and forest industry for the remaining 7 percent.

- average basal area of live trees 5.0 inches d.b.h. and larger remained stable at 93 square feet per acre. Current merchantable volume of softwoods and hardwoods averages 2,272 cubic feet per acre. Acreage in stands classed as fully stocked declined 1 percent to 1.4 million acres. Acreage in medium-stocked stands remained stable at 2.0 million acres. Together, fully stocked and medium-stocked stands make up 87 percent of the total timberland area. Poorly stocked stands increased 1 percent to 0.5 million acres and make up 13 percent of the timberland area. Stands dominated by sawtimber-size trees increased 3 percent to 2.6 million acres and make up more than two-thirds of the timberland area.

- volume of hardwood growing stock increased almost 6 percent from 6.2 to 6.6 billion cubic feet. This compares with an 18-percent increase between 1974 and 1984 and a 31-percent increase between 1964 and 1974. Collectively, the oaks, which account for 44 percent of the hardwood volume, increased 3 percent to 2.9 billion cubic feet. Yellow-poplar volume increased 11 percent to 1.3 billion cubic feet. By far the single most

dominant species in the region, **yellow-poplar** represents 19 percent of the hardwood volume. Red maple volume increased 7 percent to 0.6 billion cubic feet. With the exception of the **6-** and **12-inch** diameter classes, hardwood growing-stock volume increased across all diameter classes. Volume in trees **15-inches** d.b.h. and larger increased 15 percent to 3.0 billion cubic feet. Volume in these larger diameter classes represents 45 percent of the hardwood growing stock. By ownership, hardwood volume on NIPF land was up nearly 9 percent to 4.4 billion cubic feet. This ownership category accounts for **two-thirds** of the hardwood volume. Publicly owned land, which supports 30 percent of the hardwood volume, had an increase of 1 percent, while hardwood volume on forest industry land fell 7 percent. Volume of hardwood sawtimber rose nearly 11 percent to 21.5 billion board feet.

- volume of softwood growing stock increased more than 3 percent to 1.7 billion cubic feet. Volume of eastern white pine--the species accounting for nearly 41 percent of the softwood volume --increased 14 percent to 685 million cubic feet. Volume of Virginia pine declined 2 percent to 396 million cubic feet, whereas that of shortleaf pine dropped 32 percent to 118 million cubic feet. Collectively, volume in the **6-** and **8-inch** diameter classes dropped 9 percent, while volume in trees **17-inches** d.b.h. and larger increased 19 percent. Softwood volume on NIPF land increased nearly 3 percent to 1.2 billion cubic feet. On public land, softwood volume increased 9 percent to 362 million cubic feet but fell by 7 percent on forest industry land to 93 million cubic feet. Volume of softwood sawtimber increased by 11 percent to 6.6 billion board feet.

• net annual growth of hardwood growing stock declined 21 percent from 167 to 132 million cubic feet. Hardwood net growth declined across all ownership categories. The drop in hardwood net growth can be attributed to a maturing resource and a significant decline in overall growth due to rising mortality. Despite this drop, across all **owner-**ownerships, hardwood net growth still exceeds removals by 82 percent. In contrast to hardwoods, softwood net annual growth increased 3 percent to 44 million cubic feet. Most of this increase occurred on NIPF land, where softwood net growth rose 6 percent to 34 million cubic feet. Mean net annual growth per acre for both softwoods and hardwoods combined fell from 52 to 44 cubic feet. Net annual growth for both softwoods and hardwoods included 881 million board feet of sawtimber.

• annual removals of hardwood growing stock increased 39 percent from 52 to 72 million cubic feet. Hardwoods accounted for more than two-thirds of the total growing-stock removals and include 272 million board feet of sawtimber. By ownership, 60 percent of the hardwood removals came from NIPF timberland, 28 percent from public land and the remaining 12 percent from forest industry land. Hardwood removals declined 3 percent on NIPF land to 43 million cubic feet. In contrast, hardwood removals were up substantially on other public

and National Forest lands. Approximately 17 percent of the annual hardwood removals on National Forest was due to the reclassification of 24,000 acres of timberland to a reserved status. Inventory volume on such acres is treated as removals from timberland. Softwood growing-stock removals increased 2 percent to 35 million cubic feet. On NIPF land, softwood removals increased nearly 4 percent to 30 million cubic feet. This represents 87 percent of the softwood removals in the region. Softwood removals include 152 million board feet of sawtimber.

• annual mortality of hardwood growing stock more than doubled from 24 to 52 million cubic feet. Increases in hardwood mortality were recorded on all ownership categories. Hardwood mortality was up 131 percent on NIPF land, 200 percent on forest industry land, and 89 percent on public land. Nearly **two-**thirds of the hardwood mortality occurred on NIPF land. Hardwood mortality reduced gross growth 28 percent and included 152 million board feet of **saw-**sawtimber. In contrast to hardwood mortality, annual mortality of softwood growing stock was down 2 percent to 22 million cubic feet. Softwood mortality reduced gross growth by 34 percent and included 68 million board feet of sawtimber.

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 **20,623** sample clusters systematically spaced on the latest aerial photographs available. A **sub-sample** of 1,116 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 822 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 14 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 806 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):

	<u>Percent</u>
Per million acres of	
timberland	0.66
Per billion cubic feet of	
growing stock.	5.87
Per billion cubic feet of	
net annual growth.	0.93
Per billion cubic feet of	
annual removals.	4.12

Sampling **errors** for county and unit **totals**,^a in terms of one standard error, Mountains of North Carolina, 1990

County	Timberland area	Cubic-foot volume of growing stock		
		Inventory	Growth	Removals
		<u>Sampling error^b</u>		
Alleghany	2.34	14.08	15.35	100.03
Ashe	2.40	8.88	10.15	63.88
Avery	2.50	8.57	11.53	71.21
Buncombe	1.77	7.11	7.69	73.37
Burke	1.47	11.75	11.11	44.28
Caldwell	1.04	10.17	9.14	42.82
Cherokee	.87	8.12	9.11	42.36
Clay	1.89	13.49	18.40	77.22
Graham	.99	10.73	10.76	89.17
Haywood	1 . 8 4	10.16	9.83	51.50
Henderson	1.88	8.53	11.13	43.65
Jackson	.79	6.98	8.05	57.39
McDowell	1.14	8.55	7.76	100.01
Macon	1.03	7.63	8.97	57.21
Madison	1.59	9.33	9.67	54.15
Mitchell	3.67	10.53	12.11	100.07
Swain	1.92	16.44	15.33	100.13
Transylvania	.93	6.15	9.89	95.90
Watauga	2.30	6.87	9.43	73.22
Wilkes	1.10	6.99	7.77	26.33
Yancey	1.60	11.24	10.79	55.35
Total	.34	2.04	2.23	12.61

'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.

^bBy 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 B-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 flood-plains (omitting tidal flats below mean high tide), streams, sloughs, estuaries, and canals less than one-eighth of a statute mile in width, and lakes, reservoirs, and ponds less than.40 acres in area.

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 **saw**-timber 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 **non**-pulpmills, chipped, and then sold to pulp mills as residues, including chipped tops, jump sections, whole trees, and pulpwood sticks.

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

Salvable dead trees. Standing or down lead 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 **red**-cedar, 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	60.8	61.0	68.2	60.0
8	68.9	68.1	76.0	68.4
10	73.8	73.1	81.4	73.4
12	77.1	76.7	85.2	76.4
14	79.2	79.4	88.2	78.4
16	80.8	81.6	90.4	79.8
18	82.1	83.3	92.3	80.8
20	83.0	84.8	93.8	81.5
22	83.9	86.0	95.1	82.1
24+	85.6	87.2	97.7	83.1
Average	76.8	73.0	87.6	75.9

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, Mountains of North Carolina, 1990

County	All land ^a	Forest land			Nonforest land ^b	
		Total	Timberland	Woodland		Reserved timberland
				<u>Acres</u>		
Alleghany	150,093	78,268	70,596	--	7,672	71,825
Ashe	272,742	168,408	166,423	--	1,985	104,334
Avery	158,125	118,865	114,418	50	4,397	39,260
Buncombe	421,971	273,614	266,786	1,220	5,608	148,357
Burke	322,848	254,733	235,508	73	19,152	68,115
Caldwell	301,549	232,953	232,783	--	170	68,596
Cherokee	289,171	252,511	251,890	7	614	36,660
Clay	136,902	110,096	103,253	512	6,331	26,806
Graham	184,762	177,852	164,174	497	13,181	6,910
Haywood	355,104	269,145	180,188	953	88,004	85,959
Henderson	239,610	150,863	150,188	29	646	88,747
Jackson	313,933	276,537	263,288	527	12,722	37,396
McDowell	279,930	241,360	239,261	346	1,753	38,570
Macon	330,611	279,286	269,638	2,619	7,029	51,325
Madison	288,838	211,345	211,293	52	--	77,493
Mitchell	142,080	106,085	105,101	426	558	35,995
Swain	336,627	313,179	101,754	451	210,974	23,448
Transylvania	242,099	213,003	203,070	2,596	7,337	29,096
Watauga	200,992	135,652	126,867	--	8,785	65,340
Wilkes	481,414	358,199	341,422	--	16,777	123,215
Yancey	200,704	161,640	157,117	884	3,639	39,064
Total	5,650,105	4,383,594	3,955,018	11,242	417,334	1,266,511

^aFrom U.S. Bureau of the Census, 1980.

^bIncludes 10,878 acres of water according to Forest Survey standards of area classification, but defined by the Bureau of Census as land.

Table 3--Area of timberland, by county and forest-type group, **Mountains 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								
Al leg hany	70,596	12,337	--	--	--	8,226	49,458	--	--	575
Ae he	166,423	--	--	--	5,099	10,348	120,382	--	--	30,594
Avery	114,418	5,445	--	--	--	6,939	84,531	--	--	17,503
Buncombe	266,786	--	--	--	10,179	19,563	234,557	--	--	2,487
Burke	235,508	51,787	--	--	20,209	60,240	103,272	--	--	--
Caldwell	232,783	34,406	--	--	15,663	39,508	143,206	--	--	--
Cherokee	251,890	24,358	--	--	34,129	46,440	143,282	--	--	3,681
Clay	103,253	--	--	--	17,648	8,887	67,021	--	--	9,697
Graham	164,174	9,914	--	--	5,753	5,752	131,250	--	--	11,505
Haywood	180,188	7,083	3,942	--	--	18,987	136,848	--	--	13,328
lienderson	150,188	4,803	--	--	9,606	33,091	102,688	--	--	--
Jackson	263,288	--	--	--	10,173	9,797	228,246	--	--	15,072
McDowell	239,261	15,071	--	--	36,778	28,881	153,507	--	5,024	--
Macon	269,638	4,127	--	--	4,127	33,842	219,289	--	--	8,253
Madison	211,293	8,588	--	--	14,207	18,499	155,794	--	--	14,205
Mitchell	105,101	--	--	--	5,202	3,499	68,590	--	--	27,810
Swain	101,754	--	--	--	19,747	3,416	78,591	--	--	--
Transylvania	203,070	11,908	--	--	--	41,678	149,484	--	--	--
Watauga	126,867	4,807	4,807	--	--	1,512	101,320	--	--	14,421
Wilkes	341,422	25,581	--	--	65,243	63,937	186,661	--	--	--
Yancey	157,117	5,253	4,381	--	4,382	14,819	103,025	--	--	25,257
Total	3,955,018	225,468	13,130	--	278,145	477,861	2,761,002	--	5,024	194,388

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

County	All stands	Stand-size class			Nons tocked areas
		Sawtimber	Poletimber	Sapling-seedling	
Acres					
Al leghany	70,596	37,092	25,280	8,224	--
Ashe	166,423	122,927	43,496	--	--
Avery	114,418	104,410	--	10,008	--
Buncombe	266,786	217,312	35,796	13,678	--
Burke	235,508	91,417	89,895	54,196	--
Caldwell	232,783	139,069	54,341	39,373	--
Cherokee	251,890	144,631	74,268	32,991	--
Clay	103,253	71,103	18,755	13,395	--
Graham	164,174	101,930	36,942	25,302	--
Haywood	180,188	137,573	30,897	11,718	--
Henderson	150,188	114,473	26,109	9,606	--
Jackson	263,288	169,538	74,806	18,944	--
&Dowel l	239,261	153,890	61,512	23,859	--
Macon	269,638	190,124	67,135	12,379	--
Madison	211,293	155,383	37,411	18,499	--
Mitchell	105,101	85,993	10,405	8,703	--
Swain	101,754	51,704	37,999	12,051	--
Transylvania	203,070	134,632	62,484	5,954	--
Watauga	126,867	96,341	30,526	--	--
Wilkes	341,422	211,223	92,919	37,280	--
Yancey	157,117	104,637	32,441	20,039	--
Total	3,955,018	2,635,402	943,417	376,199	--

Table 5--Area of timberland, by county and site class, Mountains 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						
Al leghany	70,596	12,338	--	24,705	29,441	4,112
Ashe	166,423	15,447	10,198	56,416	63,966	20,396
Avery	114,418	--	--	45,453	53,913	15,052
Buncombe	266,786	--	19,561	93,603	135,983	17,639
Burke	235,508	21,033	39,485	53,666	104,140	17,184
Caldwell	232,783	19,762	14,818	54,417	128,969	14,817
Cherokee	251,890	34,127	9,770	72,690	131,622	3,681
Clay	103,253	--	4,379	22,285	49,499	27,090
Graham	164,174	15,526	24,130	62,384	56,381	5,753
Haywood	180,188	3,141	15,044	51,432	101,077	9,494
Henderson	150,188	9,606	--	58,858	59,300	22,424
Jackson	263,288	9,797	24,492	77,327	107,540	44,132
McDowell	239,261	5,024	7,512	65,696	139,712	21,317
Macon	269,638	--	26,689	69,312	107,878	65,759
Madison	211,293	17,175	28,411	55,815	94,362	15,530
Mitchell	105,101	--	13,904	43,417	39,078	8,702
Swain	101,754	--	19,199	17,081	53,423	12,051
Traneylvania	203,070	17,862	10,987	33,883	111,487	28,851
Watauga	126,867	--	6,319	38,578	62,742	19,228
Wilkes	341,422	46,603	37,280	124,192	120,672	12,675
Yancey	157,117	--	13,983	56,575	82,178	4,381
Total	3,955,018	227,441	326,161	1,177,785	1,833,363	390,268

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

County	All classes	Stocking class (percent) ^a				
		>130	100-130	60-99	16.7-59	<16.7
		Acres				
Alleghany	70,596	--	8,225	54,146	8,225	--
Ashe	166,423	10,198	35,917	94,813	25,495	--
Avery	114,418	--	51,320	48,085	15,013	--
Buncombe	266,786	5,389	57,051	146,668	57,678	--
Burke	235,508	7,694	75,226	112,005	40,583	--
Caldwell	232,783	20,436	39,488	148,304	24,555	--
Cherokee	251,890	30,006	57,604	139,787	24,493	--
Clay	103,253	4,508	22,155	50,054	26,536	--
Graham	164,174	140	50,736	72,469	35,076	5,753
Haywood	180,188	8,823	45,942	98,659	26,764	--
Henderson	150,188	6,025	68,276	66,812	9,075	--
Jackson	263,288	352	99,690	107,435	55,811	--
McDowell	239,261	14,194	80,299	117,155	23,857	3,756
Macon	269,638	29,724	95,997	108,976	34,941	--
Madison	211,293	25,761	71,156	90,258	24,118	--
Mitchell	105,101	19,105	42,577	43,419	--	--
Swain	101,754	3,417	14,802	61,122	22,413	--
Transylvania	203,070	11,908	59,990	121,555	9,617	--
Watauga	126,867	4,807	36,753	85,307	--	--
Wilkes	341,422	34,901	91,557	183,648	31,316	--
Yancey	157,117	5,219	59,306	77,772	14,820	--
Total	3,955,018	242,607	1,164,067	2,028,449	510,386	9,509

^a See stocking standards on page 13.

Table 'I--Volume of growing stock end sawtimber on timberland, by county and species group, Mountains 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				
Alleghany	122,338	2,145	22,768	32,136	65,289	400,176	5,175	75,147	100,660	219,194
Ashe	313,647	10,044	14,095	105,736	183,772	1,004,786	19,942	59,859	354,610	570,375
Avery	256,289	-	18,167	99,250	138,872	855,534	-	92,612	297,159	465,763
Buncombe	557,173	27,978	16,819	158,017	354,359	2,071,922	96,249	83,236	621,914	1,270,523
Burke	356,151	76,421	111,103	74,116	94,511	1,085,748	187,311	466,702	175,523	256,212
Caldwell	436,648	35,934	100,499	111,344	188,871	1,528,876	112,492	500,716	338,581	577,087
Cherokee	464,942	82,423	81,174	78,241	223,104	1,533,373	289,790	382,474	187,941	673,168
Clay	170,718	56,316	3,064	25,352	85,986	561,177	190,630	15,744	84,217	270,586
Graham	370,765	25,472	51,035	125,304	168,954	1,288,099	116,856	275,868	334,701	560,674
Haywood	427,522	15,743	64,872	130,147	216,760	1,527,866	58,237	264,991	542,994	661,644
Henderson	357,134	39,041	46,747	94,036	177,310	1,236,532	97,107	223,571	323,708	592,146
Jackson	525,134	9,942	35,770	132,340	347,082	1,685,810	47,525	171,310	419,081	1,047,894
McDowell	509,219	74,381	34,738	115,231	284,869	1,672,979	169,882	170,991	320,670	1,011,436
Macon	585,870	33,432	28,533	153,291	370,614	2,062,502	144,473	153,975	553,331	1,210,723
Madison	496,189	37,002	62,885	170,947	225,355	1,820,450	122,404	293,098	631,201	773,747
Mitchell	294,564	4,871	16,220	113,326	160,147	1,026,042	13,849	68,265	408,601	535,327
Swain	200,233	33,228	599	73,352	93,054	659,782	86,294	2,056	274,452	296,980
Transylvania	467,269	13,885	46,853	126,725	279,806	1,563,391	52,091	192,124	381,672	937,504
Watauga	262,437	-	20,277	97,601	144,559	802,939	-	71,426	266,856	464,657
Wilkes	719,734	171,892	105,186	194,403	248,253	2,317,185	495,803	496,525	547,874	776,983
Yancey	378,669	7,125	42,298	98,809	230,437	1,357,040	16,715	197,221	331,975	811,129
Total	8,272,645	757,275	923,702	2,309,704	4,281,964	28,062,209	2,322,825	4,257,911	7,497,721	13,983,752

^aFactors for converting to cords are shown on page 13.

Table (I--Average net annual growth of growing stock and sawtimber on timberland, by county and species group, Mountains 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
	<u>Thousand cubic feet</u>					<u>Thousand board feet</u>				
Alleghany	3,379	37	1,049	861	1,432	15,969	182	4,555	5,149	6,083
Ashe	7,045	309	519	2,747	3,470	31,707	591	3,010	11,835	16,271
Avery	5,159	-	445	2,403	2,311	22,799	-	2,979	9,867	9,953
Buncombe	11,779	689	636	3,646	6,808	59,664	3,639	3,520	18,394	34,111
Burke	10,877	2,549	3,855	2,443	2,030	55,430	17,109	21,382	7,147	9,792
Caldwell	8,762	724	2,482	2,184	3,372	49,563	2,959	17,345	10,889	18,370
Cherokee	13,585	1,760	3,354	2,925	5,546	61,996	14,218	17,132	8,085	22,561
Clay	4,137	1,452	153	924	1,608	24,833	12,194	1,108	5,386	6,145
Graham	7,601	279	1,217	3,107	2,998	40,275	1,824	6,833	16,402	15,216
Haywood	8,285	160	1,504	2,498	4,123	46,486	1,351	9,598	14,418	21,119
Henderson	7,766	659	1,427	2,137	3,543	39,525	5,299	9,812	9,375	15,039
Jackson	10,182	124	749	3,130	6,179	49,592	731	4,896	12,792	31,173
McDowell	11,092	2,223	1,208	2,651	5,010	50,002	5,625	6,349	14,605	23,423
Macon	10,929	288	509	3,725	6,407	56,227	2,124	3,253	18,590	32,260
Madison	10,627	760	1,921	4,081	3,865	54,121	3,439	12,296	21,208	17,178
Mitchell	4,925	114	391	2,141	2,279	24,995	642	2,239	12,070	10,044
Swain	3,796	520	104	1,461	1,711	18,415	2,785	251	9,023	6,356
Transylvania	8,201	238	1,731	2,441	3,791	33,664	1,516	8,483	7,652	16,013
Watauga	5,049	-	676	1,975	2,398	25,096	-	2,547	11,642	10,907
Wilkes	15,705	3,237	2,922	5,018	4,528	90,571	19,557	21,057	24,289	25,668
Yancey	6,553	61	671	2,138	3,683	29,695	1,508	3,626	11,683	14,228
Total	175,434	16,183	27,523	54,636	77,092	880,625	95,943	162,271	260,501	361,910

Table 9--Average annual removals of growing stock and sawtimber on timberland, by county and species group, Mountains 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				
Alleghany	2,481	--	2,481	--	--	10,840	--	10,840	--	--
Ashe	3,951	--	2,055	--	1,896	20,034	--	12,088	--	7,946
Avery	4,811	--	--	3,194	1,677	14,473	--	^	12,284	2,189
Buncombe	2,712	--	--	440	2,272	8,073	--	--	698	7,375
Burke	8,484	4,770	1,036	1,129	1,549	32,801	19,123	5,942	4,309	3,427
Caldwell	10,389	2,192	2,989	1,738	3,470	44,124	9,987	15,996	6,191	11,950
Cherokee	5,146	3,049	590	114	1,393	19,478	10,546	3,503	--	5,429
Clay	2,427	1,864	--	213	350	8,744	6,653	--	740	1,351
Graham	1,700	--	--	276	1,424	3,884	--	--	528	3,356
Haywood	5,785	--	--	3,072	2,713	22,693	--	--	12,024	10,669
Henderson	7,741	--	818	872	6,051	32,155	--	3,811	3,255	25,089
Jackson	3,810	127	--	1,784	1,899	13,533	--	--	7,180	6,353
McDowell	1,696	453	--	--	1,243	5,794	1,535	--	--	4,259
Macon	4,263	--	--	1,716	2,547	13,588	--	--	6,026	7,562
Madison	2,707	157	476	776	1,298	9,528	--	1,617	3,824	4,087
Mitchell	1,482	--	--	1,318	164	6,799	--	--	5,868	931
Swain	1,623	--	--	--	1,623	7,802	--	--	--	7,802
Transylvania	1,980	--	--	468	1,512	7,763	--	--	473	7,290
Watauga	6,088	--	--	4,526	1,562	27,424	--	--	20,585	6,839
Wilkes	23,192	6,636	4,814	9,560	2,182	94,523	25,435	24,557	36,109	8,422
Yancey	4,323	--	--	2,250	2,073	19,846	--	--	11,093	8,753
Total	106,851	19,248	15,259	33,446	38,898	423,899	73,279	78,354	131,187	141,079

Unit Tables

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

Forest type	All ownerships	Ownership class				
		National forest	Other public	Forest industry	Forest industry- leased	Other private
<u>Acres</u>						
Softwood types						
White pine-hemlock	225,468	23,674	2,894	10,495	--	188,405
Spruce-fir	13,130	8,323	--	--	--	4,807
Longleaf pine	--	--	--	--	--	--
Slash pine	--	--	--	--	--	--
Loblolly pine	18,304	4,508	2,761	--	--	11,035
Shortleaf pine	23,335	5,753	--	--	--	17,582
Virginia pine	174,470	7,437	2	5,160	--	161,871
Sand pine	--	--	--	--	--	--
Eastern redcedar	--	--	--	--	--	--
Pond pine	--	--	--	--	--	--
Spruce pine	--	--	--	--	--	--
Pitch pine	50,924	23,159	9,499	--	--	18,266
Table Mountain pine	11,112	11,112	--	--	--	--
Total	516,743	83,966	15,156	15,655	--	401,966
Hardwood types						
Oak-pine	477,861	111,182	151	9,899	--	356,629
Oak-hickory	2,406,798	576,315	87,772	54,891	2,100	1,685,720
Chestnut oak	354,204	88,501	9,443	19,719	--	236,541
Southern scrub oak	--	--	--	--	--	--
Oak-gum-cypress	--	--	--	--	--	--
Elm-ash-cottonwood	5,024	--	--	--	--	5,024
Maple-beech-birch	194,388	61,667	4,712	1,812	--	126,197
Total	3,438,275	837,665	102,078	86,321	2,100	2,410,111
All types	3,955,018	921,631	117,234	101,976	2,100	2,812,077

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

Ownership class	All classes	Stocking class (percent) ^a				
		>130	100-130	60-99	16.7-59	<16.7
		<u>Acres</u>				
National forest	921,631	23,698	306,490	451,881	130,053	9,509
Other public	117,234	7,190	22,768	52,973	34,303	--
Forest industry	101,976	7,914	36,609	44,292	13,161	--
Forest industry-leased	2,100	1,968	--	132	--	--
Other private	2,812,077	201,837	798,200	1,479,171	332,869	--
All ownerships	3,955,018	242,607	1,164,067	2,028,449	510,386	9,509

^a See stocking standards on page 13.

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

Forest type	All stands	Stand-size class			Nons stocked areas
		Sawtimber	Poletimber	Sapling-seedling	
		<u>Acres</u>			
Softwood types					
White pine-hemlock	225,468	173,146	37,114	15,208	---
Spruce-fir	13,130	3,942	4,807	4,381	--
Longleaf pine	--	--	--	---	---
Slash pine	---	--	--	---	--
Loblolly pine	18,304	7,269	--	11,035	--
Shortleaf pine	23,335	10,750	12,585	--	--
Virginia pine	174,470	98,755	56,839	18,876	---
Sand pine	--	--	--	--	---
Eastern redcedar	--	---	---	---	---
Pond pine	---	---	---	---	---
Spruce pine	---	---	---	---	---
Pitch pine	50,924	32,144	18,780	--	---
Table Mountain pine	11,112	3,677	3,678	3,757	--
Total	516,743	329,683	133,803	53,257	---
Hardwood types					
Oak-pine	477,861	282,034	123,468	72,359	---
Oak-hickory	2,406,798	1,628,914	556,329	221,555	---
Chestnut oak	354,204	236,840	97,039	20,325	---
Southern scrub oak	---	--	--	--	---
Oak-gum-cypress	--	--	--	--	--
Elm-ash-cottonwood	5,024	5,024	---	--	--
Maple-beech-birch	194,388	152,907	32,778	8,703	---
Total	3,438,275	2,305,719	809,614	322,942	--
All types	3,955,018	2,635,402	943,417	376,199	---

Table 13--Area of timberland, by stand-age and broad management classes, all ownerships, Mountains 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	223,830	11,035	15,161	34,428	163,206	--
11-20	174,240	8,772	40,133	33,417	91,918	--
21-30	110,366	11,534	11,174	25,701	61,957	--
31-40	316,412	19,692	85,556	25,658	180,482	5,024
41-50	417,650	--	84,287	71,587	261,776	--
51-60	613,095	3,942	76,801	89,685	442,667	--
61-70	629,068	--	52,554	61,944	514,570	--
71-80	432,319	--	36,424	30,964	364,931	--
81+	615,920	--	40,301	53,879	521,740	--
No manageable stand	422,118	--	19,377	50,598	352,143	--
All classes	3,955,018	54,975	461,768	477,861	2,955,390	5,024

Table 14--Area of timberland, by stand-age and broad management classes, public ownerships, Mountains 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	57,310	--	--	3,678	53,632	--
11-20	41,948	--	8,684	7,974	25,290	--
21-30	10,388	2,761	--	--	7,627	--
31-40	28,168	4,508	--	--	23,660	--
41-50	57,694	--	16,177	6,939	34,578	--
51-60	91,430	3,942	11,030	17,204	59,254	--
61-70	164,865	--	16,666	11,562	136,637	--
71-80	133,994	--	7,805	14,988	111,201	--
81+	293,444	--	19,412	35,873	238,159	--
No manageable stand	159,624	--	8,137	13,115	138,372	--
All classes	1,038,865	11,211	87,911	111,333	828,410	--

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

Stand-age class (years)	All classes	Broad management class				
		Pine plantation	Natural pine	Oak-pine	Upland hardwood	Lowland hardwood
<u>Acres</u>						
O-10	19,101	---	--	5,031	14,070	--
1 1-20	5,092	---	--	--	5,092	--
21-30	--	---	--	--	--	--
31-40	9,633	3,141	2,581	--	3,911	--
41-50	5,318	--	--	3,356	1,962	--
51-60	23,569	--	5,160	1,512	16,897	--
61-70	17,052	---	--	--	17,052	--
71-80	9,897	---	--	--	9,897	--
81+	4,773	---	4,773	--	--	a-
No manageable stand	9,641	---	--	--	9,641	--
All classes	104,076	3,141	12,514	9,899	78,522	--

^aIncludes 2,100 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 Mountains of North Carolina, 1990

Stand-age class (years)	All classes	Broad management class				
		Pine plantation	Natural pine	Oak-pine	Upland hardwood	Lowland hardwood
<u>Acres</u>						
O-10	147,419	11,035	15,161	25,719	95,504	---
1 1-20	127,200	8,772	31,449	25,443	61,536	--
2 1-30	99,978	a, 773	11,174	25,701	54,330	--
31-40	278,611	12,043	82,975	25,658	152,911	5,024
41-50	354,638	--	68,110	61,292	225,236	--
51-60	498,096	--	60,611	70,969	366,516	--
61-70	447,151	--	35,888	50,382	360,881	--
71-80	288,428	--	28,619	15,976	243,833	--
81+	317,703	--	16,116	18,006	283,581	--
No manageable stand	252,853	--	11,240	37,483	204,130	--
All classes	2,812,077	40,623	361,343	356,629	2,048,458	5,024

^aExcludes 2,100 acres of other private land under long-term lease to forest industry.

Table 17--Area of timberland, by broad management and stand-volume classes, Mountains 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+
				<u>Acres</u>		
Pine plantation	54,975	15,695	--	4,112	1,218	33,950
Natural pine	461,768	29,449	27,507	73,992	76,159	254,661
Oak-pine	477,861	39,570	84,206	71,753	73,381	208,951
Upland hardwood	2,955,390	239,739	257,361	500,345	503,893	1,454,052
Lowland hardwood	5,024	--	--	--	--	5,024
All classes	3,955,018	324,453	369,074	650,202	654,651	1,956,638

Table 18--Volume of growing stock on timberland, by broad management class, species group, and stand-age class, Mountains 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	132,050	--	--	5,192	45,784	67,169	--	13,905	--	--	--
Hardwood	23,625	--	--	--	1,333	13,864	--	8,428	--	--	--
Total	155,675	--	--	5,192	47,117	81,033	--	22,333	--	--	--
Natural pine											
Softwood	900,832	6,493	--	34,418	8,567	219,654	159,381	195,051	107,435	101,369	68,464
Hardwood	192,312	2,081	--	6,423	1,099	31,077	16,837	44,468	40,193	16,634	33,500
Total	1,093,144	8,574	--	40,841	9,666	250,731	176,218	239,519	147,628	118,003	101,964
Oak-pine											
Softwood	370,486	20,033	5,365	12,200	17,120	21,710	54,482	86,257	63,529	34,467	55,323
Hardwood	452,003	20,167	5,611	13,873	12,415	18,222	70,625	114,552	71,139	55,272	70,127
Total	822,489	40,200	10,976	26,073	29,535	39,932	125,107	200,809	134,668	89,739	125,450
Upland hardwood											
Softwood	277,609	20,398	2,502	5,548	3,021	13,683	17,984	41,741	62,616	48,884	61,232
Hardwood	5,912,354	287,690	44,521	60,503	81,263	304,073	592,678	998,591	1,260,521	954,823	1,327,691
Total	6,189,963	308,088	47,023	66,052	84,284	317,756	610,662	1,040,332	1,323,137	1,003,707	1,388,923
Lowland hardwood											
Softwood	--	--	--	--	--	--	--	--	--	--	--
Hardwood	11,374	--	--	--	--	11,374	--	--	--	--	--
Total	11,374	--	--	--	--	11,374	--	--	--	--	--
All types											
Softwood	1,680,977	46,924	7,867	57,358	74,492	322,216	231,847	336,954	233,580	184,720	185,019
Hardwood	6,591,668	309,938	50,132	80,799	96,110	378,610	680,140	1,166,039	1,371,853	1,026,729	1,431,318
Total	8,272,645	356,862	57,999	138,157	170,602	700,826	911,987	1,502,993	1,605,433	1,211,449	1,616,337

Table 19--Average net annual growth of growing stock on timberland, by broad management class, species group, and stand-age class, Mountains 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+
<u>Thousand cubic feet</u>											
Pine plantation											
Softwood	4,923	--	--	683	1,957	2,106	--	177	--	--	--
Hardwood	641	--	--	23	97	359	--	162	--	--	--
Total	5,564	--	--	706	2,054	2,465	--	339	--	--	--
Natural pine											
Softwood	22,586	261	--	2,208	1,050	5,848	3,944	4,333	2,277	1,890	775
Hardwood	4,839	42	--	175	40	1,172	543	1,079	875	391	522
Total	27,425	303	--	2,383	1,090	7,020	4,487	5,412	3,152	2,281	1,297
Oak-pine											
Softwood	8,891	517	292	437	918	903	1,421	2,023	1,020	743	617
Hardwood	10,208	506	197	337	386	601	1,834	2,814	1,344	935	1,254
Total	19,099	1,023	489	774	1,304	1,504	3,255	4,837	2,364	1,678	1,871
Upland hardwood											
Softwood	7,306	591	194	694	92	559	460	727	1,542	1,074	1,373
Hardwood	115,763	6,716	1,334	2,774	2,799	7,856	14,941	20,953	22,926	15,741	19,723
Total	123,069	7,307	1,528	3,468	2,891	8,415	15,401	21,680	24,468	16,815	21,096
Lowland hardwood											
Softwood	--	--	--	--	--	--	--	--	--	--	--
Hardwood	277	--	--	--	--	277	--	--	--	--	--
Total	277	--	--	--	--	277	--	--	--	--	--
All types											
Softwood	43,706	1,369	486	4,022	4,017	9,416	5,825	7,260	4,839	3,707	2,765
Hardwood	131,728	7,264	1,531	3,309	3,322	10,265	17,318	25,008	25,145	17,067	21,499
Total	175,434	8,633	2,017	7,331	7,339	19,681	23,143	32,268	29,984	20,774	24,264

^aClassifications 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, 1967-1970

Broad management class ^a and species group	All classes	No manageable	Stand-age class								
			0-10	11-20	21-30	31-40	41-50	51-60	61-70	71-80	81+
<u>thousand cubic feet</u>											
Pine plantation											
Softwood	--	--	--	--	--	--	--	--	--	--	--
Hardwood	--	--	--	--	--	--	--	--	--	--	--
Total											
Natural pine											
Softwood	23,002	--	--	1,406	7,534	4,821	--	--	1,853	2,699	
Hardwood	3,453	--	4,689	--	155	448	--	--	1,066	1,207	
Total	26,455	--	5,266	1,406	7,689	5,269	--	2,919	2,919	3,906	
Oak-pine											
Softwood	8,351	--	859	119	1,242	756	3,190	2,185	--	--	
Hardwood	4,631	--	292	114	607	366	977	2,275	--	--	
Total	12,982	--	1,151	233	1,849	1,122	4,167	4,460	--	--	
Upland hardwood											
Softwood	3,154	453	--	--	140	1,014	446	893	208	--	
Hardwood	64,260	3,231	553	--	--	4,894	23,888	11,480	3,944	10,578	
Total	67,414	3,684	553	140	140	6,706	24,334	12,373	4,152	10,578	
Lowland hardwood											
Softwood	--	--	--	--	--	--	--	--	--	--	
Hardwood	--	--	--	--	--	--	--	--	--	--	
Total	--	--	--	--	--	--	--	--	--	--	
All types											
Softwood	34,507	453	859	119	4,829	2,648	8,457	3,078	2,061	2,699	
Hardwood	72,344	3,231	845	114	577	5,501	25,313	13,755	5,010	11,785	
Total	106,851	3,684	1,704	233	5,406	8,149	33,770	16,833	7,071	14,484	

^aClassifications before timber removals.

Table 21--Merchantable volume of live trees and growing stock on timberland, by forest-type and species groups, Mountains 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
	<u>Thousand cubic feet</u>									
White pine-hemlock	663,376	43,936	466,102	49,783	103,555	632,960	42,117	461,113	44,284	85,446
Spruce-fir	19,435	--	15,735	--	3,700	16,048	--	15,119	--	929
Longleaf-slash pine		--	--	--	--	--	--	--	--	--
Loblolly-shortleaf pine	621,484	494,378	23,103	48,968	55,035	599,811	491,430	23,105	48,212	37,066
Oak-pine	886,512	153,129	224,368	163,482	345,533	822,489	151,350	219,136	155,442	296,561
Oak-hickory	6,265,482	72,378	181,218	2,046,232	3,965,654	5,719,777	72,378	179,813	1,940,891	3,526,695
Oak-gum-cypress	--	--	--	--	--	--	--	--	--	--
Elm-ash-cottonwood	11,374	--	--	7,929	3,445	11,374	--	--	7,929	3,445
Maple-beech-birch	518,724	--	25,418	123,307	369,999	470,186	--	25,418	112,946	331,822
All types	8,986,387	763,821	935,944	2,439,701	4,846,921	8,272,645	757,275	923,702	2,309,704	4,281,964

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

Treatment or disturbance	All ownerships	Ownership class				
		Public	Forest industry	Forest industry-leased	Other private	
			<u>Acres^a</u>			
Final harvest	27,991	7,985	1,910	--	18,096	
Partial harvest ^b	10,021	1,239	536	--	8,246	
Commercial thinning	1,008	--	--	--	1,008	
Other stand improvement	1,546	1,546	--	--	--	
Site preparation	3,817	1,997	--	--	1,820	
Artificial regeneration ^c	3,252	655	--	--	2,597	
Natural regeneration ^c	23,742	7,216	1,939	--	14,587	
Other treatment	19,003	600	1,118	--	17,285	
Natural disturbance	106,589	11,696	3,171	--	91,722	

^aSince some acres experience more than one treatment or disturbance, there are no column totals.

^bIncludes high grading and some selective cutting.

^cIncludes 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,, **Mountains 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	
			<u>Acres^b</u>				
Final harvest	27,991	--	7,444	1,423	19,124	--	
Partial harvest ^c	10,021	--	777	6,012	2,395	837	
Commercial thinning	1,008	--	--	1,008	--	--	
Other stand improvement	1,546	--	--	603	943	--	
Site preparation	3,817	--	1,820	--	1,997	--	
Other treatment	19,003	--	3,605	3,339	12,059	--	
Natural disturbance	106,589	--	27,289	15,357	63,943	--	

^aClassification before treatment or disturbance.

^bSince some acres experience more than one treatment or disturbance, there are no column totals.

^cIncludes high grading and some selective cutting.

Table 24--Area of timberland regenerated annually, by type of regeneration and broad management class, Mountains 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
		<u>Acres</u>				
Artificial regeneration following harvest	2,597	1,820	--	777	--	--
Natural regeneration following harvest	13,794	--	685	1,616	11,493	--
Other artificial regeneration on forest land	655	--	--	--	655	--
Other natural regeneration on forest land	9,232	--	1,811	1,724	5,691	--
Artificial regeneration on nonforest land	--	--	--	--	--	--
Natural reversion of nonforest land	716	--	--	--	716	--
Total	26,994	1,820	2,496	4,117	18,561	--

^aClassification after regeneration.

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

Treatment opportunity class	All classes	Broad management class				
		Pine plantation	Natural pine	Oak-pine	Upland hardwood	Lowland hardwood
		<u>Acres</u>				
Salvage	27,057	--	4,660	--	22,397	--
Harvest	212,527	--	29,902	28,247	154,378	--
Commercial thinning	84,013	21,996	62,017	--	--	--
Other stand improvement	117,184	--	18,020	37,918	61,246	--
Stand conversion	4,803	--	--	--	4,803	--
Regeneration	141,570	--	9,907	30,963	100,700	--
Stands in relatively good condition	1,105,658	19,807	189,790	174,723	716,314	5,024
Adverse sites ¹	2,262,206	13,172	147,472	206,010	1,895,552	--
All classes	3,955,018	54,975	461,768	477,861	2,955,390	5,024

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

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

Treatment opportunity class	All ownerships	Ownership clas s			
		Publ ic	Forest industry	Forest industry- leased	Other private
		<u>Acres</u>			
Salvage	27,057	3,756	--	--	23,301
Harvest	212,527	63,314	5,030	--	144,183
Commercial thinning	84,013	9,688	2,580	--	71,745
Other stand improvement	117,184	19,518	--	--	97,666
Stand conversion	4,803	--	--	--	4,803
Regeneration	141,570	27,517	6,285	--	107,768
Stands in relatively good condition	1,105,658	173,451	32,184	1,968	898,055
Adverse sites^a	2,262,206	741,621	55,897	132	1,464,556
All classes	3,955,018	1,038,865	101,976	2,100	2,812,077

^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, **Mountains** 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	2,308,670	154,154	176,969	499,189	1,478,358	2,103,242	153,710	173,161	470,463	1,305,908
Other public	256,511	32,298	3,506	51,457	169,250	221,897	31,539	3,506	46,059	140,793
Forest industry	301,780	30,191	63,076	73,322	135,191	282,891	29,717	63,076	66,594	123,504
Forest industry-leased	--	--	--	--	--	--	--	--	--	--
Other private	6,119,426	547,178	692,393	1,815,733	3,064,122	5,664,615	542,309	683,959	1,726,588	2,711,759
All ownerships	8,986,387	763,821	935,944	2,439,701	4,846,921	8,272,645	757,275	923,702	2,309,704	4,281,964

Table 28--**Volume** of sawtimber on timberland, by **ownership** class and species group, Mountains 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	2,119,272	419,158	191,911	513,451	994,752	5,324,612	166,934	683,558	921,538	3,552,582
Other public	259,381	58,424	--	38,800	162,157	427,872	27,112	15,557	94,394	290,809
Forest industry	430,310	67,215	120,195	120,033	122,867	457,886	13,720	154,073	47,022	243,071
Forest industry-leased	--	--	--	--	--	--	--	--	--	--
Other private	7,116,663	1,343,359	894,126	2,115,126	2,764,052	11,926,213	226,903	2,198,491	3,647,357	5,853,462
All ownerships	9,925,626	1,888,156	1,206,232	2,787,410	4,043,828	18,136,583	434,669	3,051,679	4,710,311	9,939,924

^aVolume of sawtimber trees less than 15.0 inches et d.b.h.

^bVolume 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, Mountains 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
	<u>Thousand cubic feet</u>									
National forest	38,264	2,125	4,117	10,273	21,149	20,174	1,480	471	3,983	14,240
Other public	4,415	911	204	1,003	2,297	2,461	127	--	678	1,656
Forest industry	6,681	529	1,673	1,826	2,653	10,930	177	2,359	6,480	1,914
Forest industry-leased	--	--	--	--	--	--	--	--	--	--
Other private	126,074	12,018	21,529	41,534	50,993	73,286	17,464	12,429	22,305	21,088
All ownerships	175,434	16,183	27,523	54,636	77,092	106,851	19,248	15,259	33,446	38,898

Table 30--Average net annual growth and removals of sawtimber on timberland, by ownership class and species group, Mountains 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
	<u>Thousand board feet</u>									
National forest	190,214	15,355	24,450	47,984	102,425	73,224	7,559	2,921	11,687	51,057
Other public	22,232	8,005	246	3,220	10,761	9,188	--	--	2,962	6,226
Forest industry	31,216	5,339	10,913	5,889	9,075	52,228	912	13,306	30,677	1,333
Forest industry-leased	--	--	--	--	--	--	--	--	--	--
Other private	636,963	67,244	126,662	203,408	239,649	289,259	64,808	62,127	85,861	76,463
All ownerships	880,625	95,943	162,271	260,501	361,910	423,899	73,279	78,354	131,187	141,079

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

Class of timber	All species	Pine	Other softwood	Soft hardwood	Hard hardwood
<u>Thousand cubic feet</u>					
Sawtimber trees					
Saw-log portion	5,306,449	470,345	739,680	1,378,757	2,717,667
Upper-stem portion ^a	839,869	66,373	56,049	254,759	462,688
Total	6,146,318	536,718	795,729	1,633,516	3,180,355
Poletimber trees					
	2,126,327	220,557	127,973	676,188	1,101,609
All growing-stock trees	8,272,645	757,275	923,702	2,309,704	4,281,964
Rough trees					
Sawtimber size	241,198	2,837	1,846	43,090	193,425
Poletimber size	351,397	3,709	2,876	58,133	286,679
Total	592,595	6,546	4,722	101,223	480,104
Rotten trees⁶					
Sawtimber size	113,201	--	7,520	25,640	80,041
Poletimber size	7,946	--	--	3,134	4,812
Total	121,147	--	7,520	28,774	84,853
Salvable dead trees					
Sawtimber size	7,262	1,453	779	359	4,671
Poletimber size	3,877	1,178	80	399	2,220
Total	11,139	2,631	859	758	6,891
Total, all timber	8,997,526	766,452	936,803	2,440,459	4,853,812

^aIncludes cull sections in the saw-log portion.

Table 32--Number of live trees on timberland, by species and diameter class, Mountains of NORTH CAROLINA, 1970

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	--	--	--	--	--	--	--	--	--	--	--	--	--
Slash pine	--	--	--	--	--	--	--	--	--	--	--	--	--
Shortleaf pine	15,254	3,676	2,555	1,564	2,938	2,515	1,360	389	156	44	16	41	--
Loblolly pine	4,117	--	583	606	1,266	1,281	228	131	22	--	--	--	--
Pond pine	--	--	--	--	--	--	--	--	--	--	--	--	--
Virginia pine	82,144	26,736	14,746	12,827	13,670	9,095	3,222	1,515	297	20	16	--	--
Pitch pine	24,615	5,390	5,890	2,337	3,665	2,943	2,409	1,039	561	213	88	80	--
Table Mountain pine	5,828	1,411	2,025	1,346	270	268	96	359	20	--	17	-0	--
Spruce pine	--	--	--	--	--	--	--	--	--	--	--	--	--
Sand pine	--	--	--	--	--	--	--	--	--	--	--	--	--
Eastern white pine	138,677	70,201	29,320	11,769	8,912	5,834	3,589	3,007	2,089	1,427	1,059	1,318	152
Eastern hemlock	71,743	41,896	13,996	7,535	2,501	1,695	1,201	804	658	604	288	479	86
Spruce and fir	8,636	4,827	1,110	985	716	567	263	34	105	23	--	--	6
Baldcypress	--	--	--	--	--	--	--	--	--	--	--	--	--
Pondcypress	--	--	--	--	--	--	--	--	--	--	--	--	--
Cedars	2,866	1,194	1,209	227	--	148	51	37	--	--	--	--	--
Total softwoods	353,880	155,331	71,434	39,196	33,946	24,346	12,419	7,315	3,916	2,331	1,484	1,918	244
Rardwood													
Select white oaks	68,196	24,552	14,770	8,457	6,726	4,421	2,536	2,644	1,646	891	572	824	157
Select red oaks	47,030	13,352	7,713	5,846	4,615	2,619	3,261	2,606	2,320	1,529	1,255	1,589	325
Chestnut oak	109,101	28,528	20,411	14,581	14,024	10,447	6,696	4,849	3,475	2,235	1,700	1,872	283
Other white oaks	3,129	2,027	311	152	290	137	94	73	26	19	--	--	--
Other red oaks	93,431	32,513	12,925	10,104	10,499	8,327	7,129	4,903	3,017	1,887	1,160	901	66
Hickory	87,467	39,184	19,193	9,886	6,551	5,189	2,563	2,079	1,272	621	397	517	15
Yellow birch	17,683	9,457	2,384	1,985	1,622	887	198	366	350	157	68	169	40
Hard maple	50,710	28,409	10,613	4,243	3,246	1,413	840	374	667	470	202	206	27
Soft maple	353,444	219,528	67,796	28,636	15,654	8,393	5,989	3,587	1,694	1,154	523	456	34
Beech	53,155	32,738	10,911	2,795	2,220	1,755	792	803	509	300	175	141	16
Sweetgum	2,025	921	--	580	241	162	48	73	--	--	--	--	--
Tupelo and blackgum	117,670	85,333	19,932	6,792	2,409	1,257	927	450	207	183	65	115	--
Ash	17,813	10,044	2,231	1,491	762	914	742	508	381	305	291	144	--
Cottonwood	--	--	--	--	--	--	--	--	--	--	--	--	--
Basswood	17,291	9,199	2,365	694	1,466	860	1,003	696	550	153	187	118	--
Yellow-poplar	153,995	64,749	23,965	17,361	13,137	9,048	8,210	6,885	4,976	2,670	1,499	1,402	93
Bay and magnolia	15,398	7,831	2,888	1,667	1,362	889	565	131	52	--	--	13	--
Black cherry	16,717	9,511	1,933	1,707	1,756	827	419	222	87	125	69	61	--
Black walnut	3,242	276	857	681	495	349	333	98	99	40	--	14	--
Sycamore	967	304	--	--	104	248	139	36	102	2	--	13	--
Black locust	49,341	27,568	3,586	4,844	3,330	3,438	2,592	1,820	1,070	547	238	303	5
Elm	1,914	1,183	276	300	125	--	--	30	--	--	--	--	--
Other eastern hardwoods	785,671	517,025	163,995	56,593	25,622	12,119	5,171	2,786	1,193	542	175	404	46
Total hardwoods	2,065,390	1,164,232	389,055	179,395	116,256	73,699	50,247	36,019	23,693	13,849	8,576	9,262	1,107
All species	2,419,270	1,319,563	460,489	218,591	150,202	98,045	62,666	43,334	27,609	16,180	10,060	11,180	1,351

Table 33--Number of growing-stock trees on timberland, by species and diameter class, Mountains 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	--	--	--	--	--	--	--	--	--	--	--	--	--
Slash pine	--	--	--	--	--	--	--	--	--	--	--	--	--
Shortleaf pine	14,277	3,380	1,968	1,564	2,844	2,515	1,360	389	156	44	16	41	--
Loblolly pine	3,973	--	583	606	1,122	1,281	228	131	22	--	--	--	--
Pond pine													
Virginia pine	77,920	24,905	13,317	12,198	13,558	8,970	3,124	1,515	297	20	16	--	--
Pitch pine	22,066	4,837	4,455	1,912	3,529	2,943	2,409	1,039	561	213	88	80	--
Table Mountain pine	5,828	1,411	2,025	1,346	278	268	96	359	28	--	17	--	--
Spruce pine	--	--	--	--	--	--	--	--	--	--	--	--	--
Sand pine	--	--	--	--	--	--	--	--	--	--	--	--	--
Eastern white pine	132,826	66,501	27,889	11,178	8,912	5,834	3,589	2,965	2,065	1,380	1,043	1,318	152
Eastern hemlock	65,262	37,017	12,824	7,293	2,501	1,695	1,104	804	634	580	288	439	83
Spruce and fir	8,516	4,827	1,110	985	619	567	263	34	105	--	--	--	6
Baldcypress	--	--	--	--	--	--	--	--	--	--	--	--	--
Pondcypress	--	--	--	--	--	--	--	--	--	--	--	--	--
Cedars	2,555	883	1,209	227	--	148	51	37	--	--	--	--	--
Total softwoods	333,223	143,761	65,380	37,309	33,363	24,221	12,224	7,273	3,868	2,237	1,468	1,878	241
Hardwood													
Select white oaks	52,959	16,258	9,832	7,726	6,394	4,217	2,368	2,464	1,595	788	488	717	112
Select red oaks	38,930	8,587	5,603	5,697	4,290	2,560	3,070	2,542	2,217	1,376	1,237	1,520	231
Chestnut oak	84,072	13,811	15,714	12,748	13,157	9,674	6,102	4,448	3,158	2,021	1,475	1,532	232
Other white oaks	2,363	1,455	311	--	290	137	94	31	26	19	--	--	--
Other red oaks	77,431	23,298	9,365	9,234	9,682	7,669	6,716	4,799	2,853	1,804	1,125	843	43
Rickory	63,460	21,442	16,319	7,966	5,649	5,050	2,518	1,832	1,222	598	379	470	15
Yellow birch	12,615	6,047	1,823	1,564	1,540	738	198	160	248	115	68	114	--
Hard maple	35,202	15,969	8,330	3,835	2,918	1,413	840	374	667	470	202	157	27
Soft maple	218,779	109,061	52,678	23,566	13,617	7,782	5,740	3,254	1,432	937	393	306	13
Beech	34,816	18,378	7,758	2,585	2,007	1,614	748	767	459	216	157	111	16
Sweetgum	1,244	307	--	413	241	162	48	73	--	--	--	--	--
Tupelo and blackgum	49,797	26,677	13,325	5,014	2,064	1,197	842	305	182	100	65	26	--
Ash	11,769	5,963	883	1,114	678	914	695	440	354	305	291	132	--
Cottonwood	--	--	--	--	--	--	--	--	--	--	--	--	--
Basswood	13,080	5,324	2,365	694	1,243	800	1,003	696	521	153	187	94	--
Yellow-poplar	140,150	56,733	20,547	16,259	12,548	8,654	8,026	6,848	4,976	2,615	1,483	1,374	87
Bay and magnolia	12,379	5,547	2,605	1,311	1,362	817	565	131	28	--	--	13	--
Black cherry	9,072	4,438	1,012	882	1,396	470	379	185	55	125	69	61	--
Black walnut	2,649	--	857	505	495	349	281	29	99	20	--	14	--
Sycamore	967	304	--	--	104	248	139	36	102	21	--	13	--
Black locust	36,009	19,724	3,006	3,918	1,824	2,482	1,945	1,492	836	439	168	170	5
Elm	1,914	1,183	276	300	125	--	--	30	--	--	--	--	--
Other eastern hardwoods	104,548	46,133	20,092	15,066	9,919	6,322	3,161	2,024	880	523	127	281	20
Total hardwoods	1,004,205	406,639	192,701	120,397	91,543	63,269	45,478	32,960	21,910	12,645	7,914	7,948	801
All species	1,337,428	550,400	258,081	157,706	124,906	87,490	57,702	40,233	25,778	14,882	9,382	9,826	1,042

Table 34--Merchantable volume of live trees on timberland, by species and diameter class, Mountains of North Carolina, 1955

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	13.0-16.9	17.0-18.9	19.0-20.9	21.0-28.9	29.0 and larger
Thousand cubic feet											
Softwood											
Longleaf pine	--	--	--	--	--	--	--	--	--	--	--
Slash pine	--	--	--	--	--	--	--	--	--	--	--
Shortleaf pine	118,623	4,773	19,691	34,384	31,479	12,888	7,837	1,963	1,312	4,074	--
Loblollp pine	36,917	1,668	9,721	16,112	4,671	3,728	1,017	--	--	--	--
Pond pine	--	--	--	--	--	--	--	--	--	--	--
Virginia pine	400,123	44,920	107,732	124,399	67,013	42,613	11,276	780	1,166	--	--
Pitch pine	183,387	6,868	21,907	34,867	46,699	30,019	22,064	10,202	6,088	6,673	--
Table Mountain pine	22,769	4,323	2,439	3,239	1,741	8,963	943	--	897	--	--
Spruce pine	--	--	--	--	--	--	--	--	--	--	--
Sand pine	--	--	--	--	--	--	--	--	--	--	--
Eastern white pine	690,106	37,138	36,871	63,498	66,623	81,819	77,539	73,618	69,762	129,125	32,091
Eastern hemlock	220,760	17,227	12,635	13,476	20,039	18,944	24,264	29,473	18,340	44,358	19,602
Spruce and fir	21,013	2,933	3,404	3,034	4,689	712	2,749	304	--	--	1,168
Baldcypress	--	--	--	--	--	--	--	--	--	--	--
Pondcypress	--	--	--	--	--	--	--	--	--	--	--
Cedars	4,063	619	--	1,705	787	932	--	--	--	--	--
Total softwoods	1,699,765	120,693	234,420	301,134	243,745	200,640	147,711	116,344	97,763	184,430	52,861
Hardwood											
Select white oaks	493,058	23,513	44,491	33,670	47,082	76,964	63,410	43,479	33,194	73,818	23,433
Select red oaks	687,221	18,236	31,806	31,951	61,848	73,191	91,631	77,366	86,863	136,438	37,631
Chestnut oak	1,023,160	37,688	90,317	119,971	123,674	122,677	124,359	106,783	96,174	133,940	43,377
Other white oaks	8,732	732	1,988	1,408	1,393	849	1,037	1,303	--	--	--
Other red oaks	862,140	30,374	63,729	101,004	136,100	137,233	113,340	99,843	78,344	83,071	13,080
Hickory	399,271	20,444	41,339	64,124	30,230	33,443	30,727	34,373	28,302	31,349	2,724
Yellow birch	86,904	6,197	10,738	11,616	3,403	8,969	13,484	7,300	4,748	14,939	3,288
Hard maple	168,933	13,301	21,433	17,701	13,692	11,237	26,014	24,766	13,405	17,631	7,735
Soft maple	679,207	91,293	101,233	102,790	114,833	92,832	38,144	31,641	28,141	34,073	4,223
Beech	143,027	9,930	14,373	21,333	14,020	23,044	19,635	13,935	10,943	14,742	2,848
Sweetgum	7,433	1,269	1,428	1,717	861	2,160	--	--	--	--	--
Tupelo and blackgum	87,416	13,674	11,791	13,413	16,702	9,212	5,701	6,364	3,471	4,888	--
Ash	114,564	3,773	6,130	11,363	15,048	13,797	14,310	16,280	20,168	13,293	--
cottonwood	--	--	--	--	--	--	--	--	--	--	--
Basswood	129,879	2,600	11,763	12,903	22,493	22,750	24,616	7,721	14,130	10,903	--
Yellow-poplar	1,296,179	33,417	96,298	119,293	177,919	216,003	221,092	148,326	106,394	140,343	14,494
Bay and magnolia	42,575	3,136	9,243	10,611	10,833	3,840	2,048	--	--	842	--
Black cherry	53,338	4,353	10,531	7,693	6,830	6,021	2,861	6,341	4,303	6,003	--
Black walnut	23,937	2,303	3,786	4,432	3,923	3,117	3,920	1,711	--	745	--
Sycamore	12,971	--	737	2,992	2,498	836	4,138	834	--	916	--
Black locust	252,043	12,965	18,519	38,872	42,473	44,283	34,782	23,020	13,044	22,731	1,332
Elm	2,284	1,007	340	--	--	737	--	--	--	--	--
Other eastern hardwoods	706,278	139,888	149,158	141,326	86,817	73,471	39,764	27,367	10,800	31,649	6,038
Total hardwoods	7,286,622	496,139	744,013	890,403	936,742	998,710	919,253	701,775	354,826	838,516	186,243
All species	8,986,387	616,834	978,433	1,191,557	1,200,487	1,199,350	1,066,964	818,119	632,391	1,022,946	239,106

Table 35--Volume of growing stock on timberland, by species and diameter class, Mountains 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											
Lougleaf pine	--	--	--	--	--	--	--	--	--	--	--
Slash pine	--	--	--	--	--	--	--	--	--	--	--
Shortleaf pine	118,278	4,775	19,344	34,584	31,479	12,888	7,857	1,965	1,312	4,074	--
Loblolly pine	36,158	1,668	8,962	16,112	4,671	3,728	1,017	--	--	--	--
Pond pine	--	--	--	--	--	--	--	--	--	--	--
Virginia pine	395,641	43,576	107,451	123,442	65,335	42,615	11,276	780	1,166	--	--
Pitch pine	184,429	6,424	21,393	34,867	46,699	30,019	22,064	10,202	6,088	6,673	--
Table Mountain pine	22,769	4,525	2,439	3,259	1,741	8,963	945	--	897	--	--
Spruce pine	--	--	--	--	--	--	--	--	--	--	--
Sand pine	--	--	--	--	--	--	--	--	--	--	--
Eastern white pine	685,198	35,264	56,871	65,498	66,625	81,176	77,024	72,395	69,129	129,125	32,091
Eastern hemlock	214,042	16,557	12,635	15,476	18,872	18,944	23,484	28,920	18,540	41,937	18,677
Spruce and fir	20,399	2,935	3,092	5,054	4,689	712	2,749	--	--	--	1,168
Baldcypress	--	--	--	--	--	--	--	--	--	--	--
Pondcypress	--	--	--	--	--	--	--	--	--	--	--
Cedars	4,063	619	--	1,705	787	952	--	--	--	--	--
Total softwoods	1,680,977	116,343	232,187	299,997	240,898	199,997	146,416	114,262	97,132	181,809	51,936
Hardwood											
Select white oaks	463,576	22,382	42,780	52,170	44,803	72,986	64,234	41,966	32,275	69,925	20,055
Select red oaks	652,452	17,636	30,309	31,263	59,064	71,445	88,812	71,865	85,917	151,190	44,951
Chestnut oak	944,305	34,013	86,537	113,331	116,438	115,306	115,179	98,758	88,217	136,236	40,290
Other white oaks	7,906	--	1,988	1,408	1,395	755	1,057	1,303	--	--	--
Other red oaks	830,341	27,774	62,648	95,619	130,852	135,977	112,083	97,738	76,774	81,425	9,451
Hickory	380,140	17,219	36,401	62,895	49,566	50,838	49,346	33,885	28,019	49,247	2,724
Yellow birch	67,415	5,726	10,163	10,788	3,405	4,249	9,921	6,071	4,748	12,344	--
Bard maple	163,172	12,472	19,085	17,701	15,692	11,237	26,014	24,766	13,405	15,065	7,735
Soft maple	611,327	77,935	90,280	96,902	111,866	86,177	51,919	44,792	23,523	25,741	2,192
Beech	133,502	9,135	13,370	20,385	14,011	22,276	18,253	11,214	10,157	11,853	2,848
Sweetgum	7,011	845	1,428	1,717	861	2,160	--	--	--	--	--
Tupelo and blackgum	72,421	11,531	10,247	12,784	15,346	7,185	5,421	4,425	3,471	2,011	--
Ash	109,648	2,822	5,339	11,563	14,369	12,394	14,096	16,280	20,168	12,617	--
Cottoewood	--	--	--	--	--	--	--	--	--	--	--
Bar wood	125,102	2,600	10,238	12,291	22,493	22,750	23,563	7,721	14,130	9,316	--
Yell&poplar	1,280,848	53,279	94,215	117,317	174,260	215,619	221,092	146,240	105,507	139,363	13,956
Bay and magnolia	39,961	4,226	9,243	10,013	10,855	3,840	942	--	--	842	--
Black cherry	47,635	2,807	8,531	4,948	6,617	5,356	2,329	6,541	4,503	6,003	--
Black walnut	22,338	1,971	3,786	4,452	5,470	1,138	3,920	856	--	745	--
Sycamore	12,971	--	737	2,992	2,498	856	4,138	834	--	916	--
Black locust	203,819	10,958	11,542	28,896	35,013	39,241	29,234	20,448	10,261	16,874	1,352
Elm	2,284	1,007	540	--	--	737	--	--	--	--	--
Other eao tern hardwoode	413,494	47,458	72,196	82,963	58,816	57,019	32,213	26,313	8,444	24,477	3,595
Total hardwoods	6,591,668	363,796	621,603	792,398	893,690	939,541	873,766	662,016	529,519	766,190	149,149
All species	8,272,645	480,139	853,790	1,092,395	1,134,588	1,139,538	1,020,182	776,278	626,651	947,999	201,085

Table 36--Volume of sawtimber on timberland, by species and diameter class, Mountains 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	--	--	--	--	--	--	--	--	--
Slash pine	--	--	--	--	--	--	--	--	--
Shortleaf pine	427,568	129,031	142,600	65,146	44,079	11,560	8,140	26,412	--
Loblolly pine	102,395	56,489	20,909	19,064	5,933	--	--	--	--
Pond pine	--	--	--	--	--	--	--	--	--
Virginia pine	990,253	445,010	278,361	199,516	56,661	4,126	6,579	--	--
Pitch pine	123,890	117,443	198,161	147,947	120,315	59,475	37,316	43,233	--
Table Mountain pine	78,719	13,086	8,182	46,611	5,289	--	5,551	--	--
Spruce pine	--	--	--	--	--	--	--	--	--
Sand pine	--	--	--	--	--	--	--	--	--
Eastern white pine	3,196,115	232,658	289,665	400,745	413,497	412,517	411,050	816,675	219,308
Eastern hemlock	980,118	54,585	79,529	89,804	120,579	155,982	104,888	251,814	122,937
Spruce and fir	65,985	18,436	21,564	3,553	14,657	--	--	--	7,775
Baldcypress	--	--	--	--	--	--	--	--	--
Pondcypress	--	--	--	--	--	--	--	--	--
Cedars	15,693	6,956	3,742	4,995	--	--	--	--	--
Total softwoods	6,580,736	1,073,694	1,042,713	977,981	781,010	643,660	573,524	1,138,134	350,020
Hardwood									
Select white oaks	1,585,208	--	151,161	290,319	204,158	199,927	162,451	378,446	118,746
Select red oaks	2,578,973	--	195,792	272,201	374,433	322,328	404,165	762,370	247,684
Chestnut oak	3,121,592	--	386,126	442,121	488,482	449,488	423,050	104,478	227,847
Other white oaks	20,173	--	5,112	3,261	5,041	6,759	--	--	--
Other red oaks	2,860,053	--	452,295	547,451	501,160	467,605	391,330	442,740	57,472
Hickory	1,199,038	--	171,950	206,307	221,897	165,543	144,132	272,909	16,300
Yellow birch	185,726	--	11,723	17,013	42,345	27,557	22,988	64,100	--
Hard maple	507,441	--	58,131	45,806	112,287	111,977	63,072	74,184	41,984
Soft maple	1,377,449	--	371,207	327,208	219,504	203,229	112,663	131,278	12,360
Beech	353,861	--	50,865	84,765	71,111	44,693	41,020	49,362	12,045
Sweetgum	12,439	--	3,146	9,293	--	--	--	--	--
Tupelo and blackgum	146,580	--	48,594	27,444	22,786	20,480	16,850	10,426	--
Ash	399,023	--	45,092	47,857	61,963	76,738	100,363	67,010	--
Cottonwood	--	--	--	--	--	--	--	--	--
Basswood	422,232	--	77,112	89,335	102,758	35,673	69,202	48,152	--
Yellow-poplar	4,989,642	--	628,913	936,263	1,085,993	780,997	602,886	859,105	95,485
Bay and magnolia	59,905	--	36,102	15,375	4,007	--	--	4,421	--
Black cherry	146,297	--	22,537	21,787	10,740	32,993	23,732	34,508	--
Black walnut	44,132	--	18,380	4,240	15,009	3,398	--	3,105	--
Sycamore	37,481	--	7,891	3,116	17,823	3,820	--	4,831	--
Black locust	571,962	--	123,701	144,229	110,779	79,042	40,310	68,230	5,671
Elm	3,016	--	--	3,016	--	--	--	--	--
Other eastern hardwoods	859,250	--	202,046	224,955	137,443	119,298	37,990	119,492	18,026
Total hardwoods	21,481,473	--	3,067,876	3,763,362	3,889,719	3,151,545	2,656,204	4,099,147	853,620
All species	28,062,209	1,073,694	4,110,589	4,741,343	4,670,729	3,795,205	3,229,728	5,237,281	1,203,640

Table 37--Volume of sawtimber on timberland, by species, size class, and tree grade, Mountains 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	2,322,825	151,468	501,826	1,669,531	--	434,669	46,619	147,115	240,935	--
Eastern white pine ^b	3,196,115	453,420	1,106,325	1,623,805	12,565	2,273,047	448,763	840,534	975,602	8,148
Spruce and fir ^b	65,985	--	17,465	48,520	--	22,432	--	13,127	9,305	--
Cypress ^b	--	--	--	--	--	--	--	--	--	--
Other eastern softwoods ^b	995,811	241,421	291,259	412,389	50,742	756,200	241,421	242,010	234,704	38,065
Total	6,580,736	846,309	1,916,875	3,754,245	63,307	3,486,348	736,803	1,242,786	1,460,546	46,213
Hardwood ^c										
Select white and red oaks	4,164,181	933,099	1,633,306	1,389,570	208,206	3,254,708	933,099	1,405,581	769,347	146,681
Other white and red oaks	6,001,818	701,530	2,070,040	2,729,140	501,108	4,165,452	701,530	1,774,141	1,408,981	280,800
Hickory	1,199,038	156,961	431,990	484,249	125,838	820,781	156,961	361,465	234,259	68,096
Yellow birch	185,726	26,491	89,280	52,451	17,504	156,990	26,491	78,217	37,226	15,056
Hard maple	507,441	48,727	156,294	224,279	78,141	403,504	48,727	147,288	145,331	62,158
Sweetgum	12,439	--	4,337	8,102	--	--	--	--	--	--
Ash, walnut, and black cherry	589,452	128,964	213,376	230,833	16,279	429,559	128,964	182,285	107,975	10,335
Yellow-poplar	4,989,642	1,393,876	1,759,807	1,623,112	212,847	3,424,466	1,393,876	1,295,210	633,353	102,027
Other eastern hardwoods	3,831,736	251,071	916,750	2,199,692	464,223	1,994,775	251,071	671,422	869,643	202,639
Total	21,148,473	3,640,719	7,275,180	8,941,428	1,624,146	14,650,235	3,640,719	5,915,609	4,206,115	887,792
All species	28,062,209	4,487,028	9,192,055	12,695,673	1,687,453	18,136,583	4,377,522	7,158,395	5,666,661	934,005

^aFor 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.

^bFor 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.

^cFor 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 35—CUBIC VOLUME IN THE
Mountains 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
<u>Thousand cubic feet</u>									
Softwood									
Longleaf pine	--	--	--	--	--	--	--	--	--
Slash pine	--	--	--	--	--	--	--	--	--
Shortleaf pine	83,545	27,803	28,573	12,243	7,659	1,934	1,299	4,034	--
Loblolly pine	21,005	12,310	4,183	3,518	994	--	--	--	--
Pond pine	--	--	--	--	--	--	--	--	--
Virginia pine	209,506	98,709	58,538	39,664	10,712	750	1,133	--	--
Pitch pine	141,291	28,189	41,784	28,032	21,035	9,832	5,901	6,512	--
Table Mountain pine	14,998	2,840	1,638	8,699	933	--	888	--	--
Spruce pine	--	--	--	--	--	--	--	--	--
Sand pine	--	--	--	--	--	--	--	--	--
Eastern white pine	552,023	51,435	59,097	75,321	73,001	69,413	66,730	125,590	31,430
Eaa tern hemlock	172,141	12,207	16,602	17,421	22,064	27,456	17,747	40,465	18,179
Spruce and fir	12,550	3,893	4,239	663	2,600	--	--	--	1,147
Baldcypress	--	--	--	--	--	--	--	--	--
Pondcypress	--	--	--	--	--	--	--	--	--
Cedars	2,966	1,368	708	890	--	--	--	--	--
Total softwooda	1,210,025	238,754	215,362	186,457	139,006	109,385	93,704	176,601	50,756
Hardwood									
Select white oaks	301,661	--	31,661	59,977	56,354	38,119	29,929	66,241	19,380
Select red oaks	407,550	--	41,725	56,804	74,796	62,158	75,565	135,505	40,997
Chestnut oak	614,867	--	84,632	94,668	100,290	08,733	80,776	127,393	38,375
Other white oaks	3,806	--	1,027	637	941	1,201	--	--	--
Other red oaks	548,800	--	93,762	111,700	98,101	08,318	71,049	76,733	9,137
Hickory	226,069	--	36,016	41,833	43,013	30,606	25,770	46,230	2,601
Yellow birch	35,829	--	2,412	3,509	8,560	5,419	4,356	11,573	--
Hard maple	99,530	--	11,030	9,213	22,672	22,391	12,423	14,259	7,542
Soft maple	276,439	--	77,886	68,192	44,110	39,413	21,160	23,619	2,059
Beech	75,928	--	9,860	18,157	15,548	9,856	9,058	10,824	2,625
Sweetgum	2,408	--	622	1,786	--	--	--	--	--
Tupelo and blackgum	29,852	--	10,501	5,778	4,620	3,943	3,148	1,862	--
Ash	77,489	--	9,631	10,074	12,390	14,778	18,690	11,926	--
Cottonwood	--	--	--	--	--	--	--	--	--
Basswood	84,424	--	16,342	18,700	20,660	6,959	13,028	7,735	--
Yellow-poplar	878,855	--	121,922	177,307	196,018	134,896	99,883	135,013	13,816
Bay and magnolia	12,445	--	7,603	3,212	821	--	--	809	--
Black cherry	26,838	--	4,772	4,392	2,034	5,905	4,123	5,612	--
Black walnut	9,535	--	3,853	941	3,325	747	--	669	--
Sycamore	7,282	--	1,585	636	3,487	727	--	847	--
Black locust	123,323	--	24,872	31,133	24,492	17,573	8,965	15,059	1,229
Elm	610	--	--	610	--	--	--	--	--
Other eaa tern hardwoods	172,884	--	39,742	46,513	28,069	23,955	7,833	23,286	3,406
Total hardwoods	4,096,424	--	631,456	765,772	760,301	595,697	485,756	716,195	141,247
All species	5,306,449	238,754	846,818	952,229	899,307	705,082	579,460	892,796	192,003

Table 39--Total volume of live trees on timberland, by species and diameter class, Mountains 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 end larger
Thousand cubic feet													
Softwood													
Longleaf pine	--	--	--	--	--	--	--	--	--	--	--	--	--
Slash pine	--	--	--	--	--	--	--	--	--	--	--	--	--
Shortleaf pine	142,188	1,013	2,869	6,675	23,831	40,133	35,957	14,605	8,856	2,214	1,472	4,563	--
Loblolly pine	44,496	--	821	2,364	11,765	18,828	5,347	4,227	1,144	--	--	--	--
Pond pine	--	--	--	--	--	--	--	--	--	--	--	--	--
Virginia pine	499,859	4,905	20,572	50,486	129,121	145,423	77,324	48,912	12,897	891	1,328	--	--
Pitch pine	222,838	1,294	5,915	8,650	26,193	40,656	53,987	34,550	25,310	11,693	6,965	7,625	--
Table Mountain pine	29,618	449	2,616	5,707	2,837	3,747	1,987	10,189	1,072	--	1,014	--	--
Spruce pine	--	--	--	--	--	--	--	--	--	--	--	--	--
Sand pine	--	--	--	--	--	--	--	--	--	--	--	--	--
Eastern white pine	863,216	18,607	35,617	49,666	68,966	77,345	77,729	94,910	89,677	84,997	80,359	148,451	36,892
Eastern hemlock	288,058	11,364	16,928	24,653	15,540	18,231	23,297	21,804	27,859	33,744	21,168	51,119	22,351
Spruce and fir	27,967	1,335	1,105	4,019	4,226	6,050	5,494	829	3,188	378	--	--	1,343
Baldcypress	--	--	--	--	--	--	--	--	--	--	--	--	--
Pondcypress	--	--	--	--	--	--	--	--	--	--	--	--	--
Cedars	6,691	215	1,322	962	--	2,101	951	1,140	--	--	--	--	--
Total softwoods	2,124,931	39,182	87,765	161,182	282,479	352,514	282,073	231,166	170,003	133,917	112,306	211,758	60,586
Hardwood													
Select white oaks	651,426	7,029	20,889	34,545	58,311	68,113	58,988	95,622	81,052	56,507	43,610	94,567	32,193
Select red oaks	869,499	3,707	10,936	25,382	40,684	39,989	76,784	90,536	113,238	95,825	107,038	192,935	72,445
Chee tout oak	1,298,157	6,958	25,699	53,667	115,494	148,981	152,015	150,000	151,297	129,782	117,438	190,980	55,846
Other white oaks	12,537	610	553	1,053	2,613	1,810	1,767	1,184	1,322	1,625	--	--	--
Other red oaks	1,102,915	7,588	18,805	43,942	85,756	127,019	168,937	169,633	141,967	122,560	95,926	104,571	16,211
Hickory	533,076	9,180	23,686	32,831	54,765	80,459	61,798	67,741	61,574	41,567	34,083	62,128	3,264
Yellow birch	116,276	2,368	4,108	8,624	13,774	14,486	4,187	11,111	16,553	9,313	5,777	18,708	7,267
Hard maple	230,042	6,540	15,472	18,833	27,111	21,728	19,039	13,534	31,244	29,690	16,062	21,460	9,329
Soft maple	1,014,557	56,864	113,549	128,856	127,807	125,637	138,431	111,520	69,961	61,805	33,794	41,171	5,162
Beech	205,294	7,805	12,356	14,797	19,388	27,134	17,767	28,634	24,405	17,541	13,568	18,360	3,539
Sweetgum	9,221	77	--	1,837	1,790	2,047	995	2,475	--	--	--	--	--
Tupelo and blackgum	150,357	18,032	23,088	22,512	14,774	16,090	19,804	11,008	6,797	7,882	4,054	6,316	--
Ash	138,385	2,461	2,688	5,489	7,437	13,660	17,462	15,903	16,629	18,546	22,958	15,152	--
Cottonwood	--	--	--	--	--	--	--	--	--	--	--	--	--
Baldcypress	156,458	2,385	4,107	3,285	13,972	14,940	25,891	26,071	28,143	8,888	16,150	12,626	--
Yellow poplar	1,533,491	16,962	34,059	73,754	114,635	137,866	202,468	244,203	240,994	167,022	119,592	157,545	16,391
Bay and magnolia	58,916	2,319	4,240	7,131	11,561	12,836	12,911	4,524	2,412	--	--	982	--
Black cherry	73,274	3,655	2,952	5,943	12,874	9,229	8,151	7,089	3,434	7,670	5,268	7,009	--
Black walnut	33,042	23	1,389	3,108	4,703	5,385	7,162	3,704	4,644	2,022	--	902	--
Sycamore	15,224	44	--	--	899	3,535	2,925	997	4,800	966	--	1,050	--
Black locust	323,163	6,448	5,492	17,845	23,540	47,917	52,082	53,914	42,289	28,028	15,863	28,129	1,616
Elm	3,937	356	658	1,343	699	--	--	881	--	--	--	--	--
Other eastern hardwoods	1,258,770	133,136	212,311	205,535	193,230	176,517	107,120	89,348	48,331	32,930	13,319	38,894	8,099
Total hardwoods	9,788,017	294,547	537,037	710,312	945,817	1,095,378	1,156,684	1,199,632	1,099,086	840,169	664,500	1,013,493	231,362
All species	11,912,948	333,729	624,802	871,494	1,228,296	1,447,892	1,438,757	1,430,798	1,269,089	974,086	776,806	1,225,251	291,948

Species	All classes	Diameter class (inches at breast height)											
		2.9	4.9	6.9	8.9	10.9	12.9	14.9	16.9	18.9	20.9	28.9	larger
		1.0-3.0	3.0-5.0	5.0-7.0	7.0-9.0	9.0-11.0	11.0-13.0	13.0-15.0	15.0-17.0	17.0-19.0	19.0-21.0	21.0-29.0 and larger	
Hundred thousand pounds													
Softwood													
Longleaf pine	--	--	--	--	--	--	--	--	--	--	--	--	--
Slash pine	--	--	--	--	--	--	--	--	--	--	--	--	--
Shortleaf pine	98,666	580	1,740	3,858	16,269	28,190	25,417	10,385	6,296	1,625	1,045	3,261	--
Loblolly pine	31,995	--	481	1,641	8,431	13,616	3,882	3,110	834	--	--	--	--
Pond pine	--	--	--	--	--	--	--	--	--	--	--	--	--
Virginia pine	371,060	4,172	16,767	45,587	94,904	106,084	56,555	35,907	9,451	673	960	--	--
Pitch pine	149,265	1,021	5,404	5,769	17,549	27,212	35,674	22,723	16,651	7,768	4,499	4,995	--
Table Mountain pine	19,012	385	2,375	3,068	1,679	2,327	1,262	6,557	697	--	662	--	--
Spruce pine	--	--	--	--	--	--	--	--	--	--	--	--	--
Sand pine	--	--	--	--	--	--	--	--	--	--	--	--	--
Eastern white pine	530,065	7,794	16,179	31,754	46,155	51,413	51,061	61,371	57,012	52,293	48,569	86,577	19,887
Eastern hemlock	209,070	6,791	10,769	19,165	13,371	15,830	18,454	17,192	20,515	24,090	14,173	34,297	13,823
Spruce and fir	20,274	796	714	2,754	3,221	4,426	4,084	628	2,450	329	--	--	872
Baldcypress	--	--	--	--	--	--	--	--	--	--	--	--	--
Pondcypress	--	--	--	--	--	--	--	--	--	--	--	--	--
Cedars	4,544	124	847	631	--	1,458	687	797	--	--	--	--	--
Total softwoods	1,433,951	21,663	55,276	114,227	201,579	250,556	197,076	158,670	113,906	86,778	70,508	129,130	34,582
Hardwood													
Select white oaks	529,551	5,607	15,261	25,091	45,503	54,143	48,051	77,967	66,769	46,926	36,870	79,735	27,628
Select red oaks	701,743	3,142	8,174	18,795	32,900	32,964	62,947	73,970	92,339	77,859	85,713	154,903	56,037
Chestnut oak	1,016,599	6,318	20,284	37,766	86,086	113,778	116,624	118,004	119,769	102,962	94,261	154,825	45,922
Other white oaks	9,937	445	375	710	2,065	1,448	1,499	1,018	1,076	1,301	--	--	--
Other red oaks	934,978	5,817	13,915	35,001	73,612	109,852	145,276	145,019	121,387	103,165	80,957	87,270	13,707
Hickory	431,624	8,171	20,688	23,513	41,375	62,116	49,400	55,715	50,811	34,688	28,670	53,567	2,910
Yellow birch	89,894	1,952	3,367	6,131	10,122	10,574	3,300	8,886	12,789	7,211	4,544	15,030	5,988
Hard maple	188,908	5,436	12,877	13,305	21,304	17,303	15,590	11,150	26,192	24,965	13,732	18,629	8,425
Soft maple	731,162	43,246	80,062	88,716	94,993	90,429	100,356	81,249	50,656	44,530	24,355	28,947	3,623
Beech	162,246	6,481	10,448	8,696	14,225	21,128	13,963	23,278	19,926	14,556	11,308	15,409	2,828
Sweetgum	6,715	38	--	1,326	1,268	1,471	764	1,848	--	--	--	--	--
Tupelo and blackgum	102,467	14,267	17,176	12,220	9,533	10,356	13,058	7,679	4,849	5,654	2,959	4,716	--
Ash	81,407	1,458	1,710	4,056	4,965	8,593	10,538	9,579	9,714	10,426	12,442	7,926	--
Cottonwood	--	--	--	--	--	--	--	--	--	--	--	--	--
Basswood	103,790	1,606	2,805	1,922	8,631	9,736	16,985	17,297	19,031	6,133	10,974	8,670	--
Yellow-poplar	1,077,185	12,525	22,664	44,774	77,070	94,564	141,369	172,869	176,976	120,305	86,828	114,881	12,360
Bay and magnolia	36,283	1,478	2,641	4,389	7,126	7,837	7,905	2,791	1,481	--	--	635	--
Black cherry	49,507	1,923	1,970	3,558	8,560	6,335	5,557	4,866	2,400	5,456	3,755	5,127	--
Black walnut	27,842	11	1,147	2,448	3,837	4,567	6,043	3,121	4,005	1,825	--	838	--
Sycamore	10,863	26	--	--	542	2,385	2,051	725	3,528	755	--	851	--
Black locust	312,014	5,353	4,531	15,317	22,192	45,079	50,634	52,912	42,307	27,898	15,866	28,295	1,630
Elm	2,616	270	441	857	441	--	--	607	--	--	--	--	--
Other eastern hardwoods	951,819	112,906	173,277	141,445	138,618	123,623	78,392	68,150	37,373	26,451	11,033	33,364	7,187
Total hardwoods	7,559,150	238,476	413,813	490,036	704,968	828,281	890,302	838,700	863,378	663,066	524,267	813,618	190,245
All species	8,993,101	260,139	469,089	604,263	906,547	1,078,837	1,087,378	1,097,370	977,284	749,844	594,775	942,748	224,827

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

Species	Live timber ^a		Growing stock	
	Net annual growth	Annual timber removals	Net annual growth	Annual timber removals
	<u>Thousand cubic feet</u>			
Softwood				
Yellow pines	16,431	19,248	16,183	19,248
Eastern white pine	21,722	14,341	21,626	14,341
Spruce and fir	637	--	631	--
Cypress	--	--	--	--
Other eastern softwoods	5,325	918	5,266	918
Total softwoods	44,115	34,507	43,706	34,507
Hardwood				
Select white and red oaks	20,815	13,977	20,712	12,752
Other white and red oaks	32,020	19,127	31,861	18,366
Hickory	5,531	2,274	5,502	2,218
Yellow birch	1,029	105	1,007	105
Hard maple	3,533	--	3,510	--
Sweetgum	213	--	213	--
Ash, walnut, and black cherry	3,845	1,754	3,799	1,249
Yellow-poplar	30,106	21,325	30,035	21,212
Tupelo and blackgum	1,254	779	1,230	660
Bay and magnolia	813	--	807	--
Other eastern hardwoods	34,259	18,761	33,052	15,782
Total hardwoods	133,418	78,102	131,728	72,344
All species	177,533	112,609	175,434	106,851

^aMerchantable portion only.

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

Species	Net annual growth	Annual timber removals
<u>Thousand board feet</u>		
Softwood		
Yellow pines	95,943	73,279
Eastern white pine	133,493	74,436
Spruce and fir	2,508	--
Cypress	--	--
Other eastern softwoods	26,270	3,918
Total softwoods	<u>258,214</u>	<u>151,633</u>
Hardwood		
Select white and red oaks	103,509	52,807
Other white and red oaks	164,927	68,206
Hickory	26,543	6,648
Yellow birch	2,828	431
Hard maple	12,248	--
Sweetgum	399	--
Ash, walnut, and black cherry	17,261	4,174
Yellow-poplar	170,968	98,535
Tupelo and blackgum	2,483	1,954
Bay and magnolia	4,944	--
Other eastern hardwoods	116,301	39,511
Total hardwoods	<u>622,411</u>	<u>272,266</u>
All species	<u>880,625</u>	<u>423,899</u>

Table 43--Average annual removals of growing stock -on timberland, by species and diameter class, Mountains 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
<u>Thousand cubic feet</u>											
Softwood											
Yellow pines	19,248	1,043	1,696	4,869	4,820	4,873	1,118	572	257	--	--
Eastern white pine	14,341	307	691	250	1,004	1,999	2,098	2,126	2,867	2,825	174
Spruce and fir	--	--	--	--	--	--	--	--	--	--	--
Cypress	--	--	--	--	--	--	--	--	--	--	--
Other eastern softwoods	918	130	--	142	--	119	--	339	188	--	--
Total softwoods	<u>34,507</u>	<u>1,480</u>	<u>2,387</u>	<u>5,261</u>	<u>5,824</u>	<u>6,991</u>	<u>3,216</u>	<u>3,037</u>	<u>3,312</u>	<u>2,825</u>	<u>174</u>
Hardwood											
Select white and red oaks	12,752	312	536	655	,684	1,239	1,709	1,410	1,426	3,894	887
Other white and red oaks	18,366	712	947	1,863	1,462	2,015	2,997	2,430	2,379	3,322	239
Hickory	2,218	293	62	271	524	308	361	178	221	--	--
Yellow birch	105	--	--	--	--	105	--	--	--	--	--
Hard maple	--	--	--	--	--	--	--	--	--	--	--
Sweetgum	--	--	--	--	--	--	--	--	--	--	--
Ash, walnut, and black cherry	1,249	178	--	200	--	--	326	--	157	388	--
Yellow-poplar	21,212	188	488	462	3,681	3,441	4,041	3,705	2,039	3,167	--
Tupelo and blackgum	660	65	119	--	144	143	--	--	--	189	--
Bay and magnolia	--	--	--	--	--	--	--	--	--	--	--
Other eastern hardwoods	15,782	2,000	2,163	1,721	2,459	1,898	2,361	1,845	586	743	--
Total hardwoods	<u>72,344</u>	<u>3,748</u>	<u>4,315</u>	<u>5,172</u>	<u>8,954</u>	<u>9,149</u>	<u>11,801</u>	<u>9,568</u>	<u>6,808</u>	<u>11,703</u>	<u>1,126</u>
All species	106,851	5,228	6,702	10,433	14,778	16,140	15,017	12,605	10,120	14,528	1,300

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

Species	Live timber ^a	Growing stock	Sawtimber
	<u>Thousand cubic feet</u>		<u>Thousand board feet</u>
Softwood			
Yel low pines	17,091	16,650	41,013
Eastern white pine	4,286	4,286	21,600
Spruce and fir	647	647	2,263
Cypress	--	--	--
Other eastern softwoods	581	507	2,960
Total softwoods	22,605	22,090	67,836
Hardwood			
Select white and red oaks	9,496	7,514	24,658
Other white and red oaks	30,198	24,090	77,351
Hickory	7,341	6,531	22,713
Yellow birch	745	537	367
Hard maple	1,204	787	2,764
Sweetgum	--	--	--
Ash, walnut, and black cherry	1,845	1,511	3,526
Yel low-poplar	1,682	1,535	2,121
Tupelo and blackgum	424	213	608
Bay and magnolia	128	128	502
Other eastern hardwoods	16,761	9,180	17,051
Total hardwoods	69,824	52,026	151,661
All species	92,429	74,116	219,497

^aMerchantable portion only.

Table 45--Change in number of live trees on timberland, by species group, survey completion date, and diameter class, Mountains 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
<u>Thousand trees</u>									
Yellow pine									
1984	158,945	41,936	33,644	29,499	25,416	15,189	8,073	3,639	1,549
1990	131,958	37,213	25,799	18,680	21,817	16,102	7,315	3,433	1,599
Change	-26,987	-4,723	-7,845	-10,819	-3,599	+913	-758	-206	+50
Other softwood									
1984	216,143	122,817	38,550	20,779	11,456	6,401	5,030	3,532	7,578
1990	221,922	118,118	45,635	20,516	12,129	8,244	5,104	3,882	8,294
Change	+5,779	-4,699	+7,085	-263	+673	+1,843	+74	+350	+716
Hardwood									
1984	2,241,441	1,280,198	428,459	199,652	118,573	74,852	53,109	34,332	52,266
1990	2,065,390	1,164,232	389,055	179,395	116,256	73,699	50,247	36,019	56,487
Change	-176,051	-115,966	-39,404	-20,257	-2,317	-1,153	-2,862	+1,687	+4,221

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

Land use class	Survey completion date			Change 1984-1990
	1974	1984	1990	
	<u>Acres</u>			
Forest land				
Timberland:				
Pine and oak-pine types	806,565	953,729	994,604	+40,875
Hardwood types	3,208,001	3,029,820	2,960,414	-69,406
Total	4,014,566	3,983,549	3,955,018	-28,531
Reserved timberland	406,056	392,981	417,334	+24,353
Wetland	12,058	11,242	11,242	-
Total forest land	4,432,680	4,387,772	4,383,594	-4,178
Nonforest land				
Cropland	301,712	362,237	382,635	+20,398
Pasture and range	583,610	502,539	454,968	-47,571
Other	313,814	397,551	418,030	+20,479
Total	1,199,136	1,262,327	1,255,633	-6,694
Total land ^a	5,631,816	5,650,099	5,639,227	-10,872

^aExcludes 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, Mountains 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										
1974	4,612,549	--	--	967,220	820,951	792,737	542,500	359,995	368,623	760,523
1984	5,934,174	--	--	931,654	1,088,516	964,132	763,966	617,286	487,381	1,081,239
1990	6,580,736	--	--	1,073,694	1,042,713	977,981	781,010	643,660	573,524	1,488,154
Hardwood										
1974	15,121,452	--	--	--	2,730,835	2,996,090	2,539,494	2,059,999	1,476,525	3,318,509
1984	19,357,181	--	--	--	3,205,128	3,594,130	3,560,791	2,873,620	2,013,604	4,109,908
1990	21,481,473	--	--	--	3,067,876	3,763,362	3,889,719	3,151,545	2,656,204	4,952,767
GROWING STOCK (in thousand cubic feet)										
Softwood										
1974	1,389,249	145,587	253,881	273,965	192,180	165,621	104,483	65,784	64,192	123,556
1984	1,624,950	141,981	242,400	263,864	254,800	201,415	147,145	112,795	84,876	175,674
1990	1,680,977	116,343	232,187	299,997	240,898	199,997	146,416	114,262	97,132	233,745
Hardwood										
1974	5,257,134	441,040	606,223	734,300	799,367	748,220	575,025	436,965	295,757	620,237
1984	6,231,172	407,393	620,847	179,906	938,097	897,544	806,353	609,604	403,325	768,103
1990	6,591,668	363,796	621,603	192,398	893,690	939,541	873,766	662,016	529,519	915,339
LIVE TIMBER^b (in thousand cubic feet)										
Softwood										
1974	1,406,686	151,338	255,876	275,290	193,959	166,370	105,048	66,284	65,403	127,118
1984	1,644,984	147,385	244,189	265,173	257,155	202,310	147,914	113,651	86,474	180,733
1990	1,699,765	120,695	234,420	301,154	243,745	200,640	147,711	116,344	97,765	237,291
Hardwood										
1974	5,855,886	605,380	719,974	818,414	856,075	790,395	301,988	454,905	309,277	699,478
1984	6,884,415	557,838	737,781	869,284	1,004,710	948,097	844,097	634,625	421,778	866,205
1990	7,286,622	496,139	744,013	890,403	956,742	998,710	919,253	701,775	554,826	1,024,761

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

^bMerchantable volume.

