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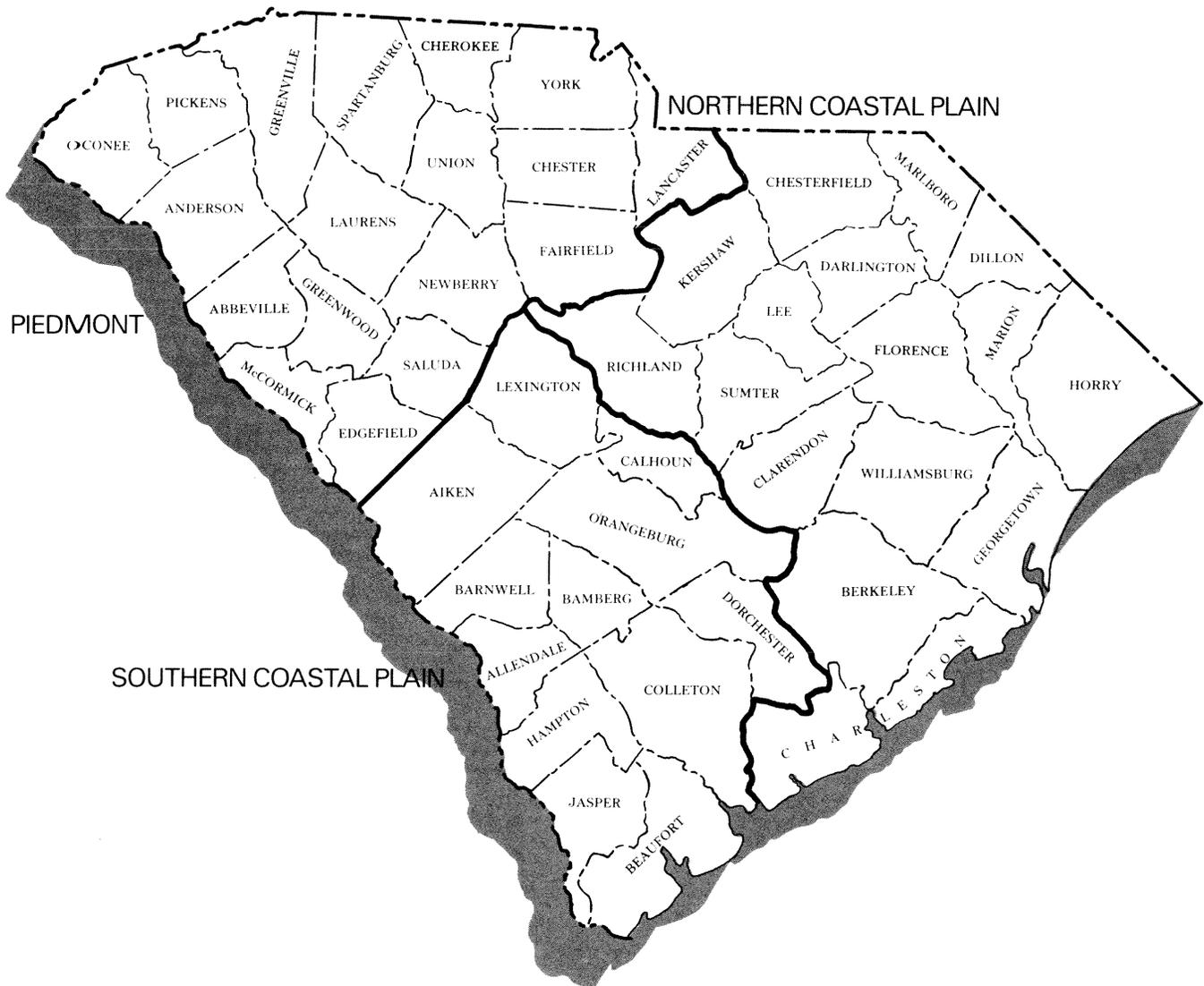


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Resource Bulletin
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South Carolina's Timber Industry — An Assessment of Timber Product Output and Use, 1991

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Foreword

This report presents the findings of a 1991 canvass of all primary wood-using plants in South Carolina, and presents changes in product output and residue use since 1989. It complements Forest Inventory and Analysis periodic inventory of volume and removals from the State's timberland. The canvass was made to determine the amount and source of wood receipts and annual timber product drain by county in 1991. In addition, interstate and cross-regional movement of industrial roundwood were determined. Only primary wood-using mills were canvassed. Primary mills are those that process roundwood in log or bolt form or as chipped roundwood. Examples of industrial roundwood products are saw logs, pulpwood, veneer logs, poles, and logs used for composite board products. Mills producing products from residues generated at primary and secondary processors were not canvassed. Trees chipped in the woods were included in the estimate of timber drain only if they were delivered to a primary domestic manufacturer.

A 100-percent canvass of all primary wood-processors in South Carolina was conducted in 1992 for the year 1991. Out-of-State mills known to be using logs or bolts harvested from South Carolina timberland were also contacted. Each mill was canvassed by mail or through personal contact at plant locations. Telephone contact was made as a followup to mailed questionnaire responses when additional information or clarification of response was necessary. In the event of a nonresponse, data collected in previous surveys were updated based on current data collected for mills of similar size, product type, and location.

Pulpwood production data were taken from an annual canvass of all southeastern pulpmills. Medium density fiberboard, insulating board, and hardboard plants were included in this survey. The pulpwood production survey is conducted annually in cooperation with the American Pulpwood Association. Previous surveys for all other timber products have been conducted every year since 1972. Surveys for other timber products have gone back as far as 1957 for a 10-year period to 1967, and a 3-year period from 1967 to 1970.

These studies are a cooperative project involving the Southeastern Forest Experiment Station, the South Carolina State Commission of Forestry, and the Cooperative Extension Service, Clemson University. The Southeastern Station gratefully acknowledges the cooperation and assistance provided by the South Carolina Division of Forestry in collecting mill data. Appreciation is also expressed to forest industry and mill managers for providing timber products information. The information presented in this report is based on responses from 95 percent of mills operating in 1991. These mills accounted for over 84 percent of the 1991 mill receipts. Eight of the 9 pulpmills, 5 mills manufacturing other industrial products, 13 of the 15 veneer mills, and 77 of the 79 sawmills operating in 1991 provided current mill data.

Introduction

The commodity drain surveys for 1989, 1990, and 1991 bracket one of the most devastating hurricanes ever to hit the East Coast and certainly South Carolina. 1989 was essentially a pre-Hugo year, while 1990 was affected by the massive salvage effort. The 1991 drain survey reflects product output for the first year after Hugo. Although most of the storm damage was concentrated in the Northern Coastal Plain unit, a general decline in products output for 1991 was recorded for the State as a whole. While the decline is not entirely attributable to the storm, it is obvious that Hurricane Hugo's effects will be felt by the forest industry in South Carolina for many years to come.

Output of Industrial Timber Products

Between 1989 and 1991, the combined industrial timber products output from roundwood and plant byproducts declined 13 percent from 781 to 678 million cubic feet. Output from roundwood products was down 77 million cubic feet, or 13 percent, while output of plant byproducts dropped 25 million cubic feet, also 13 percent (tables 1 and 11). Output of softwood roundwood products declined almost 11 percent to 411 million cubic feet and accounted for nearly 81 percent of the State's total output of roundwood timber products. Hardwood roundwood products fell 23 percent to 98 million cubic feet.

Pulpwood and saw logs were the principal roundwood products in 1991. Combined output of these two products totaled more than 453 million cubic feet and accounted for 89 percent of the State's total roundwood output.

Pulpwood

Pulpwood remains the leading roundwood product in South Carolina, as it has since the early 1960's. Between 1989 and 1991, pulpwood production fell 29 million cubic feet to nearly 250 million cubic feet (table 1). Despite this 11-percent decline, pulpwood production accounted for 49 percent of the State's total roundwood timber products output. This proportion of total output has remained at or near 50 percent since 1977. Both softwood and hardwood output dropped between 1989 and 1991, with softwood output down 8 percent to 183 million cubic feet and hardwood output down 16 percent to 66 million cubic feet. Between 1987 and 1991, softwood pulpwood production was highest, nearly 212 million cubic feet, in 1990 (fig. 1). This peak was primarily due to the salvage effort of Hugo-damaged timber. Softwoods accounted for 73 percent of the State's pulpwood production in 1991, and hardwoods made up 27 percent of production. Hardwoods have accounted for an

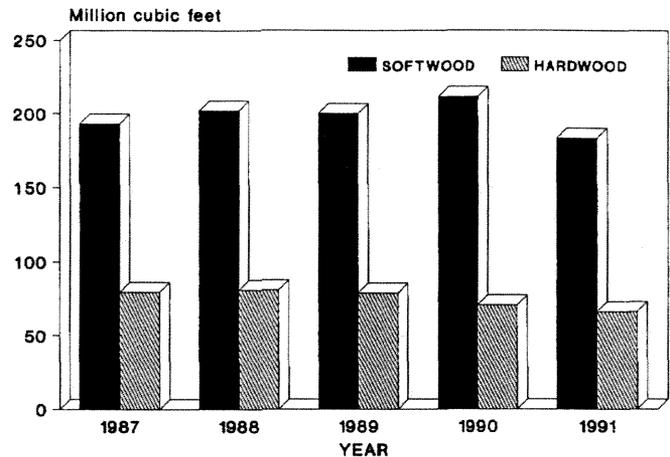


Figure 1--Round pulpwood production, by species group and year.

increasing share of production over the last 20 years, even though a slight dropoff in production was recorded for the last 3 years. The trend toward increased use of hardwoods should continue as developing technologies allow more applications.

Saw Logs

Saw logs accounted for nearly 40 percent of the State's total roundwood products output in 1991. This product ranked second behind pulpwood in roundwood production (table 1). Production of softwood and hardwood saw logs combined dropped 17 percent between 1989 and 1991 to 203 million cubic feet. Output of hardwood saw logs fell 34 percent to 25 million cubic feet, while that of softwood saw logs declined nearly 14 percent to 179 million cubic feet. Between 1987 and 1991, outputs of both softwood and hardwood logs peaked in 1988 at 214 and 40 million cubic feet, respectively (fig. 2). In 1991, softwoods accounted for 88 percent of the State's saw-log production, 3 percent more than in 1989. Hardwood saw-log production has continued its steady decline. In 1978, hardwoods accounted for nearly a quarter of the saw-log production, compared with only 12 percent in 1991.

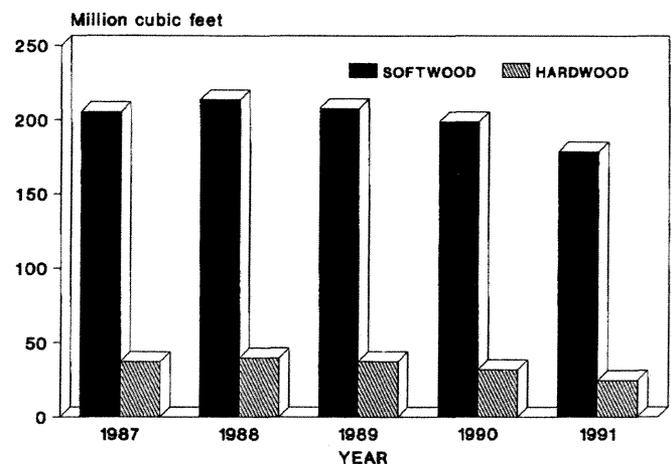


Figure 2--Roundwood saw-log production, by species group and year.

Veneer Logs

Veneer production between 1989 and 1991 declined 9 percent to 52 million cubic feet (table 1). Both hardwood and softwood output declined. Hardwood veneer output fell 32 percent to 7 million cubic feet, while softwood production was down by 4 percent to nearly 45 million cubic feet. Softwoods accounted for 86 percent of the State's veneer production, 4 percent more than in 1989. The peak of veneer-log production for both softwood and hardwood occurred in 1987 at 56 and 13 million cubic feet, respectively (fig. 3). Veneer accounted for 10 percent of the State's output of all roundwood timber products in 1991, about the same as in 1989. This level of production has remained consistent throughout the last decade.

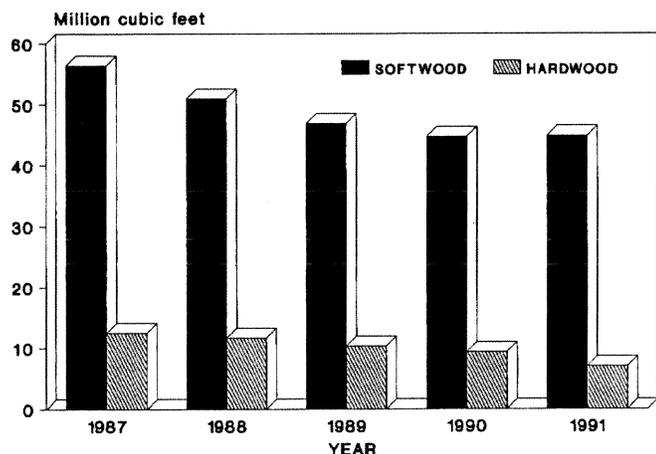


Figure 3--Roundwood veneer-log production, by species group and year.

Other Industrial

Other industrial products include poles, posts, mulch, roundwood exported to Georgia for excelsior, and roundwood exported to North Carolina for oriented strand board. In 1991, combined output of roundwood used for these products dropped by 19 percent, to 3.5 million cubic feet (table 1). All of the roundwood used for other industrial products was softwood. These products accounted for about 1 percent of the State's total roundwood timber products output, about the same proportion as in 1989.

Number of Mills and Receipts

The number of primary processing mills in South Carolina continues to shrink. The remaining mills, however, tend to be the most efficient, largest, or most modern. In 1978, 158 mills had receipts totaling 418 million cubic feet (Tansey 1984). In 1988, 124 mills had receipts of more than 549 million cubic feet (Davenport and Tansey

1990). In 1991, 108 mills had receipts of nearly 531 million cubic feet (tables 2 and 3). Between 1988 and 1991, receipts declined by 3 percent while the number of operating mills declined by 13 percent. Between 1978 and 1991, receipts increased by 27 percent while the number of operating mills declined by about one-third.

Sawmill closings accounted for most of the decline in primary processing plants. The number of sawmills operating in South Carolina dropped from 87 in 1989 to 79 in 1991 (table 2). Over the same period, receipts of saw logs dropped by 14 percent to 201 million cubic feet (table 3). Hardwood saw-log receipts dropped by nearly a third and totaled only 26 million cubic feet, while softwood receipts dropped by 11 percent to 175 million cubic feet. Yellow pine accounted for nearly 86 percent of the total saw-log receipts, and hard hardwoods accounted for 8 percent (table 4). Of the 79 currently operating mills, nearly half had receipts of less than 5 million board feet, while 38 percent had receipts of more than 10 million board feet.

The number of veneer mills operating in South Carolina declined from 17 in 1989 to 15 in 1991 (table 2). Receipts of veneer logs totaled 47 million cubic feet, nearly 8 percent less than in 1989. Production exceeded receipts by about 10 percent, or 5 million cubic feet. Receipts of hardwood veneer logs dropped 33 percent to nearly 6.8 million cubic feet, while those of softwood declined only 1 percent to 40 million cubic feet. Softwoods accounted for 85 percent of the State's total veneer-log receipts, 5 percent more than in 1989. In 1991, over 85 percent of the 47 million cubic feet used for veneer was yellow pine (table 4). Soft hardwoods (mostly gum and yellow-poplar) accounted for 11 percent, or nearly 5.4 million cubic feet, of the State's total roundwood veneer receipts.

A new pulpmill came on line in 1991, bringing the State's total to nine (table 2). Total receipts increased to 278 million cubic feet, or 11 percent from 1989 (table 3). Receipts of hardwood pulpwood, which include 312,000 cubic feet of roundwood chips, increased most (24 percent), from 57 million cubic feet in 1989 to 71 million cubic feet in 1991. Softwood pulpwood receipts, which include 19.7 million cubic feet of roundwood chips, increased 7 percent to 207 million cubic feet and accounted for 74 percent of the total pulpwood receipts.

There was no change in the number of mills producing other industrial products between 1989 and 1991 (table 2). The five mills that produce poles and pilings or posts had receipts of 4.6 million cubic feet, an increase of 21 percent from 1989 (table 3). Southern yellow pine accounted for all of the volume used by these mills (table 4).

Roundwood Movement

In 1989 and 1990, South Carolina was a net exporter of industrial roundwood. Exports for these years exceeded imports by nearly 49 and 47 percent, respectively. In 1991, however, this trend was reversed. Imports exceeded exports by nearly 24 percent, or 22 million cubic feet (table 5). In 1991, production of roundwood from South Carolina timberlands totaled nearly 509 million cubic feet, about 81 percent of which was retained for processing by mills within the State. Exports of roundwood to mills outside South Carolina totaled 96 million cubic feet, or 19 percent of production. Imports from other States amounted to 118 million cubic feet, or 22 percent of the State's receipts. The volume of trees chipped in the woods and delivered to chip facilities for export overseas is not included in the estimate of roundwood harvested or exported. Forest Inventory and Analysis does not have the means to monitor this volume or to differentiate at export facilities between the volume of chips generated at chip facilities and the volume processed in the woods. The result is an underestimate of the volume exported from South Carolina, especially for hardwoods. Japan and other Pacific Rim countries are expanding their manufacturing and are demanding more hardwood chips for high-grade specialty papers. The volume of hardwood chips exported from the Southern United States has grown in recent years, from 25,000 tons in 1987 to more than 1 million tons in 1990 (Colquitt 1991). Japanese, Korean, and Taiwanese wood-fiber companies are the primary purchasers.

The State is a net exporter of saw logs. In 1991, it exported 8 percent of its saw-log production, more than 17 million cubic feet, to mills in Georgia and North Carolina (tables 6 and 7). In return, mills in South Carolina imported 7 percent, or 15 million cubic feet, of their receipts from Georgia, Kentucky, Mississippi, North Carolina, and Tennessee.

The State is also a net exporter of veneer logs. In 1991, more than 7 million cubic feet were exported to mills in North Carolina (tables 6 and 8). Only 2 million cubic feet, or nearly 5 percent, of the State's total veneer receipts were imported from Georgia and North Carolina. South Carolina was a net importer of roundwood pulpwood in 1991 (table 6). Receipts exceeded production by nearly 29 million cubic feet, or 10 percent. Total exports amounted to nearly 71 million cubic feet, or 28 percent of the production. Imports from North Carolina totaled 96 million cubic feet, and amounted to 96 percent of the total pulpwood imports (table 9). Other imports came from Georgia and Virginia. Georgia received the largest amount of South Carolina's pulpwood exports, 38 million cubic feet. North Carolina received more than 26 million cubic feet. Other State's receiving South Carolina's pulpwood were Florida, Alabama, and Louisiana.

The State is a net importer of roundwood used for other industrial products. In 1991, it imported from Georgia and North Carolina 1.4 million cubic feet, or nearly 31 percent, of its receipts of roundwood used for other industrial products (tables 6 and 10). The largest proportion of these imports, 68 percent, came from North Carolina and was all southern yellow pine. Only 277,000 cubic feet of the production used for other industrial products were exported to other State's, while 3.2 million cubic feet were retained for other industrial products within the State. Exports went to Georgia, North Carolina, and Virginia.

Plant Byproducts

In 1991, processing of primary products at South Carolina mills generated nearly 170 million cubic feet of mill residues. This volume included 69 million cubic feet of coarse residues, 61 million cubic feet of fine residues, and 40 million cubic feet of bark (table 11). Of the mill residues generated, 84 percent was from the processing of softwoods and 16 percent from hardwoods. Virtually all of the mill residues generated in 1991 were used for products or industrial fuel. About 49 percent of the residues were used for industrial fuel, 35 percent in the manufacture of fiber products, 5 percent for composition board, and 4 percent for sawn products. The remaining 7 percent was used for miscellaneous products, such as mulch and litter (table 12).

Mill residues from saw logs totaled 118 million cubic feet and accounted for nearly 70 percent of the residues produced (table 11). Most of the nearly 51 million cubic feet of coarse residues from saw logs were used in fiber products (table 12), while the bark and sawdust were used for industrial fuel. Nearly 43 percent of the shavings was used for particleboard in 1989 and 1991. In 1991, nearly 6 million cubic feet, or 31 percent, of the shavings was used for industrial fuel. In 1991, processing of veneer logs generated 31 million cubic feet of residues, 18 percent of the State's total (table 11). Nearly half of the 15 million cubic feet of coarse residues were cores from veneer lathes that were sawn into landscape timbers and framing studs (tables 11 and 12). The slabs from these cores along with other coarse residues from veneer mills were chipped for use in fiber products. Most of the 16 million cubic feet of sawdust and bark were used for industrial fuel.

Residues generated by other industrial mills totaled 7 million cubic feet (table 11). Bark accounted for 4 million cubic feet, or nearly 60 percent of these residues. It was used primarily for mulch and industrial fuel. Some 3 million cubic feet of coarse residues from these plants were used for fuel and fiber products.

Regional Trends

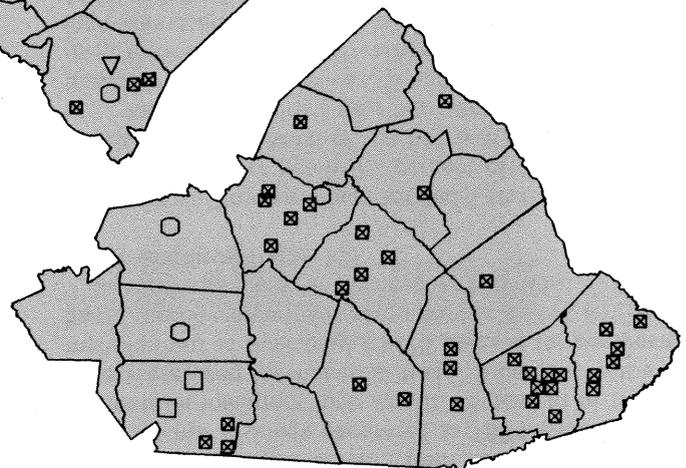
Output of industrial roundwood products declined in all regions between 1989 and 1991; the largest drop of 27 percent was in the Northern Coastal Plain (tables 13, 14, and 15). A substantial decline in output for all hardwood products was recorded in all regions. Output for all softwood products increased only in the Piedmont region and was down nearly 25 percent in the Northern Coastal Plain. Softwoods accounted for 79 percent or more of the total output of industrial roundwood products in all regions.

Southern Coastal Plain

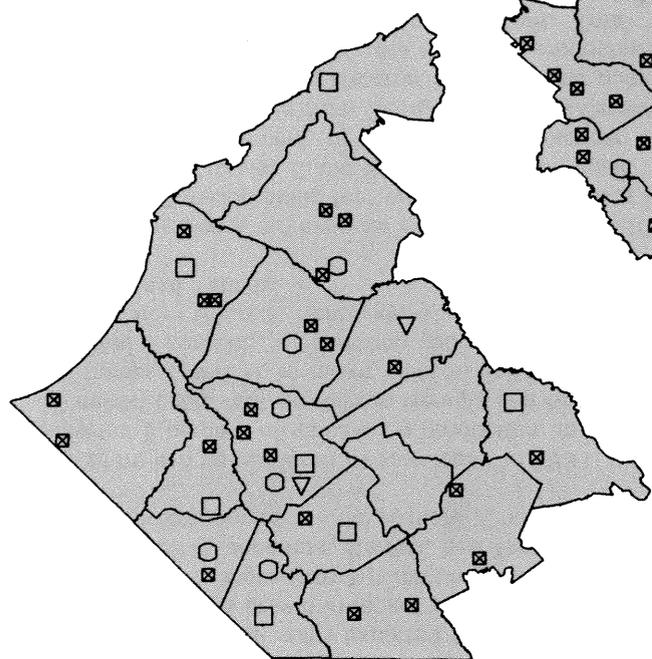
In 1991, nearly 143 million cubic feet of roundwood were produced in the 12 counties making up the Southern Coastal Plain of South Carolina, and accounting for 28 percent of the State's total output (fig. 4). This total reflects a decline of almost 7 percent between 1989 and

1991 (table 13). Softwood output was down only 2 percent in the region, and accounted for 82 percent of the total roundwood output in 1991. Saw-log production of more than 73 million cubic feet accounted for greater than half of the total roundwood production in this region. The Southern Coastal Plain was the only region where the production of saw logs exceeded that of pulpwood. Production of pulpwood was down by less than 1 percent and accounted for 42 percent of the region's total roundwood output. This region produced 36 percent of the State's saw logs, 24 percent of the pulpwood, 15 percent of the veneer logs, and 35 percent of the roundwood used for other industrial products. In 1991, the Southern Coastal Plain region had 22 sawmills, 6 veneer mills, and 3 other miscellaneous mills. Nearly 60 percent of the sawmills in this region had receipts greater than 10 million board feet, while more than a quarter of the mills had receipts less than 5 million board feet.

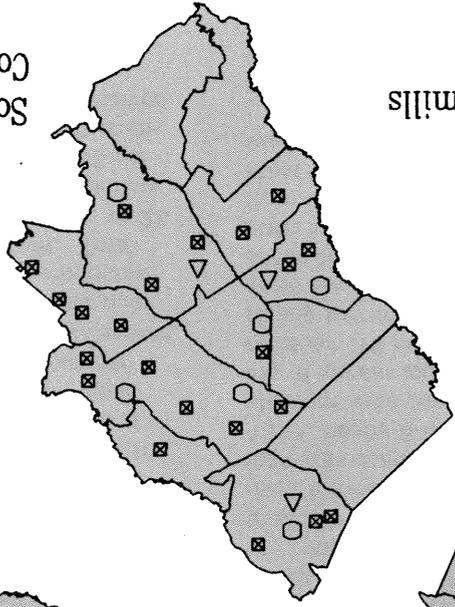
Piedmont



Northern Coastal Plain



Southern Coastal Plain



Sawmills



Veneer mills



Pulpmills



Other miscellaneous mills



Figure 4--Primary wood-using mills by regions.

Northern Coastal Plain

Between 1989 and 1991, roundwood production from the 16 counties that make up the Northern Coastal Plain of South Carolina (fig. 4) fell nearly 27 percent to 180 million cubic feet. This region accounted for 35 percent of the State's total roundwood output in 1991 compared with 42 percent in 1989 (table 14). As stated earlier, this area was dealt a staggering blow by Hurricane Hugo. A 1990 inventory showed that Hurricane Hugo reduced softwood volume in the 16-county area by 25 percent and hardwood volume by 3 percent (Sheffield and Thompson 1992). Nearly a third of the remaining hardwood volume was damaged to some degree. The 1992 inventory of the Northern Coastal Plain shows that softwood volume was reduced 26 percent and hardwood volume more than 13 percent (Thompson and Sheffield 1993).

Hardwood output was down nearly 18 million cubic feet and accounted for only 18 percent of the total roundwood output for the region in 1991. Inventory reductions and accessibility problems are major contributors to the reduction in hardwood output. Saw-log production, which accounted for 41 percent of the total roundwood production for the area, was down 22 percent to 74 million cubic feet. In 1991, hardwood saw-log output was cut nearly in half from the reported levels of 1989. Pulpwood production dropped 39 million cubic feet and accounted for 46 percent of the region's total roundwood output. Veneer production dropped 17 percent to 22 million cubic feet in 1991 and accounted for nearly 12 percent of the region's total output of industrial roundwood. Plywood mills used 52 percent of the 19 million cubic feet of softwood veneer logs for the manufacture of pine plywood. The Northern Coastal Plain produced 37 percent of the State's saw logs, 33 percent of the pulpwood, 41 percent of the veneer, and 50 percent of the other industrial products. In 1991, 37 mills, including 22 sawmills, 6 veneer mills, 7 pulpmills, and 2 other miscellaneous mills operated in the Northern Coastal Plain. Half of the sawmills in this area had receipts greater than 10 million board feet; 9 percent had receipts between 5 and 10 million board feet, while 41 percent had receipts less than 5 million board feet.

Piedmont Region

The 18-county Piedmont region (fig. 4) produced more roundwood than any other region in the State. In 1991, this region produced 186 million cubic feet of industrial roundwood, about 1 percent less than in 1989 (table 15). Total production of industrial roundwood was nearly 37 percent of the State's total industrial roundwood output. The Piedmont region produced less roundwood used for saw logs in 1989 and 1991 than the other regions. Saw-log production declined by almost 19 percent to 56

million cubic feet in 1991, but it still accounted for nearly 30 percent of the region's total industrial roundwood volume. The Piedmont region produced more veneer and pulpwood than the other two regions. Pulpwood production increased by 10 percent between 1989 and 1991, to 107 million cubic feet. Pulpwood production in this area accounted for nearly 43 percent of the State's total pulpwood production. Softwood pulpwood increased 15 percent from 1989 to nearly 80 million cubic feet and accounted for 74 percent of the region's total pulpwood production. In 1991, veneer output increased by 6 percent to 23 million cubic feet and accounted for 44 percent of the State's veneer production. Softwood accounted for 89 percent of the 1991 veneer production. Plywood mills used 9 million cubic feet or 44 percent of the softwood veneer output. Nearly 7 percent of the hardwood veneer was used for plywood. Roundwood used for other industrial products declined 19 percent, to slightly over one-half million cubic feet. In 1991, 40 mills, including 35 sawmills, 3 veneer mills, and 2 pulpmills operated in the Piedmont. Two-thirds of the sawmills in the region had receipts of less than 5 million board feet, while only about a fifth of the mills had receipts greater than 10 million board feet.

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Definitions

- Composite panels.** Consists of structural panels (oriented strand board or waterboard), particleboard (industrial underlayment, thin panelboard).
- Consumption.** The quantity of a commodity, such as pulpwood, utilized.
- Drain.** The volume of roundwood removed from any geographic area where timber is grown.
- Exports.** The volume of roundwood utilized by mills outside the geographic area where timber was cut.
- Industrial roundwood products.** Any primary use of the main stem of a tree, such as saw logs, poles, pilings, veneer logs, pulpwood, posts, or cooperage logs.
- Imports.** The volume of roundwood delivered to a mill or group of mills in a specific geographic area but harvested from outside that particular area.
- Plant residues.** Wood material generated in the production of timber products at primary manufacturing plants.
- Coarse residues.** Suitable for chipping such as slabs, edgings, trim, veneer cores, and ends.
- Fine residues.** Not suitable for chipping such as sawdust, shavings, and veneer clippings.
- Primary wood-using plants.** Industries that receive roundwood or chips from roundwood for the manufacture of products such as veneer, pulp, and lumber.
- Veneer log.** Logs to be used in the production of plywood, finished panels, or veneer sheets, both rotary cut and sliced.
- Roundwood.** Logs, bolts, or other round sections cut from trees for industrial manufacture or consumer use.
- Roundwood chipped.** Any timber cut primarily for industrial manufacture, delivered to non-pulpmills, chipped, and then sold to pulp mills for use as fiber. Includes tops, jump sections, and whole trees.
- Roundwood product drain.** That portion of total drain used for a product.
- Saw log.** A log meeting minimum standards of diameter, length, and defect, including logs at least 8 feet long, sound and straight, and with minimum diameter inside bark of 6 inches for softwoods and 8 inches for hardwoods.
- Timber products output.** Roundwood production in an area's forests (equals roundwood product drain).
- Timber removals.** The merchantable volume of trees removed from the timberland inventory by harvesting, cultural operations such as stand improvement, land clearing, or changes in land use.
- Receipts.** The quantity or volume of industrial roundwood received at a mill or by a group of mills in a geographic area, regardless of the geographic source. Volume of roundwood receipts is equal to the volume of roundwood retained in a geographic location plus roundwood imported from other locations.
- Roundwood.** Logs, bolts, or other round sections cut from trees for industrial manufacture or consumer use.
- Roundwood chipped.** Any timber cut primarily for industrial manufacture, delivered to non-pulpmills, chipped, and then sold to pulp mills for use as fiber. Includes tops, jump sections, and whole trees.
- Roundwood product drain.** That portion of total drain used for a product.
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- Veneer log.** Logs to be used in the production of plywood, finished panels, or veneer sheets, both rotary cut and sliced.

Conversion Factors^a

Saw logs

Softwood 0.18018 cubic foot = 1 board foot
 5.55 board feet = 1 cubic foot

Hardwood 0.16531 cubic foot = 1 board foot
 6.05 board feet = 1 cubic foot

Veneer logs

Softwood 0.17493 cubic foot = 1 board foot
 5.72 board feet = 1 cubic foot

Hardwood 0.16050 cubic foot = 1 board foot
 6.23 board feet = 1 cubic foot

Pulpwood^b

Softwood 70.5 cubic feet/cord
Hardwood 70.5 cubic feet/cord

^a Conversion factors vary with stem size (d.b.h.) and species. The factors shown are for trees of average diameters removed in South Carolina during the latest survey period.

^b Cubic feet of solid wood per cord.

Table 1—Roundwood timber products output, by product and species group, South Carolina, 1989 and 1991

| Product and species group | Year | | Change |
|-----------------------------|----------------------------|---------|----------------|
| | 1989 | 1991 | |
| | <i>Thousand cubic feet</i> | | <i>Percent</i> |
| Saw logs | | | |
| Softwood | 207,730 | 178,816 | -13.9 |
| Hardwood | 37,398 | 24,559 | -34.3 |
| Total | 245,128 | 203,375 | -17.0 |
| Veneer logs | | | |
| Softwood | 46,941 | 44,917 | -4.3 |
| Hardwood | 10,292 | 7,017 | -31.8 |
| Total | 57,233 | 51,934 | -9.3 |
| Pulpwood^a | | | |
| Softwood | 200,144 | 183,394 | -8.4 |
| Hardwood | 78,885 | 66,262 | -16.0 |
| Total | 279,029 | 249,656 | -10.5 |
| Other industrial | | | |
| Softwood | 4,179 | 3,489 | -16.5 |
| Hardwood | 127 | 0 | -100.0 |
| Total | 4,306 | 3,489 | -19.0 |
| All industrial | | | |
| Softwood | 458,994 | 410,616 | -10.5 |
| Hardwood | 126,702 | 97,838 | -22.8 |
| Total | 585,696 | 508,454 | -13.2 |

^a Includes roundwood that was delivered to non-pulpmills and then chipped and sold to pulpmills (17,195,000 cubic feet in 1989 and 18,397,000 cubic feet in 1991).

Table 2-- Number of primary wood-using plants, by industry, South Carolina, 1989 and 1991

| Industry | Year | | Change |
|--------------|---------------|------|----------------|
| | 1989 | 1991 | |
| | <i>Number</i> | | <i>Percent</i> |
| Sawmills | 87 | 79 | -9.2 |
| Veneer mills | 17 | 15 | -11.8 |
| Pulpmills | 8 | 9 | 12.5 |
| Other | 5 | 5 | 0 |
| All plants | 117 | 108 | -7.7 |

Table 3-- Roundwood receipts, by product and species group, South Carolina, 1989 and 1991

| Product and species group | Year | | Change |
|-----------------------------|----------------------------|---------|----------------|
| | 1989 | 1991 | |
| | <i>Thousand cubic feet</i> | | <i>Percent</i> |
| Saw logs | | | |
| Softwood | 196,493 | 174,804 | -11.0 |
| Hardwood | 38,413 | 26,330 | -31.5 |
| Total | 234,906 | 201,134 | -14.4 |
| Veneer logs | | | |
| Softwood | 40,602 | 40,031 | -1.4 |
| Hardwood | 10,114 | 6,798 | -32.8 |
| Total | 50,716 | 46,829 | -7.7 |
| Pulpwood^a | | | |
| Softwood | 193,836 | 207,159 | 6.9 |
| Hardwood | 57,413 | 71,130 | 23.9 |
| Total | 251,249 | 278,289 | 10.8 |
| Other industrial | | | |
| Softwood | 3,849 | 4,648 | 20.8 |
| Hardwood | 0 | 0 | 0 |
| Total | 3,849 | 4,648 | 20.8 |
| All industrial | | | |
| Softwood | 434,780 | 426,642 | -1.9 |
| Hardwood | 105,940 | 104,258 | -1.6 |
| Total | 540,720 | 530,900 | -1.8 |

^a Includes roundwood that was delivered to non-pulpmills and then chipped and sold to pulpmills (18,090,000 cubic feet in 1989 and 20,021,000 cubic feet in 1991).

Table 4--Roundwood receipts by species and type of mill, South Carolina, 1991

| Species | Type of mill | | | | | |
|------------------------|----------------------------|----------------|---------------|-----------------------------|------------------------|--------------|
| | All mills | Sawmills | Veneer mills | OSB and panels ^a | Pulpmills ^b | Other mills |
| | <i>Thousand cubic feet</i> | | | | | |
| Softwood | | | | | | |
| Yellow pine | 217,021 | 172,342 | 15,475 | 24,556 | NA | 4,648 |
| Other softwood | 2,462 | 2,462 | 0 | 0 | NA | 0 |
| Unclassified | 207,159 | 0 | 0 | 0 | 207,159 | 0 |
| Total softwoods | 426,642 | 174,804 | 15,475 | 24,556 | 207,159 | 4,648 |
| Hardwood | | | | | | |
| Soft hardwoods | 15,424 | 10,050 | 5,018 | 356 | NA | 0 |
| Hard hardwoods | 17,704 | 16,280 | 1,233 | 191 | NA | 0 |
| Unclassified | 71,130 | 0 | 0 | 0 | 71,130 | 0 |
| Total hardwoods | 104,258 | 26,330 | 6,251 | 547 | 71,130 | 0 |
| All species | 530,900 | 201,134 | 21,726 | 25,103 | 278,289 | 4,648 |

NA = not applicable.

^a OSB = oriented strand board.

^b Only collected by softwood and hardwood and includes roundwood chipped.

Table 5-- Industrial roundwood movement, by year and species group, South Carolina, 1989 and 1991

| Year | Production | Exports | Retained | Imports | Receipts |
|----------------------------|------------|---------|----------|---------|----------|
| <i>Thousand cubic feet</i> | | | | | |
| SOFTWOOD | | | | | |
| 1989 | 458,994 | 61,667 | 397,327 | 37,453 | 434,780 |
| 1991 | 410,616 | 72,005 | 338,611 | 88,031 | 426,642 |
| HARDWOOD | | | | | |
| 1989 | 126,702 | 30,563 | 96,139 | 9,801 | 105,940 |
| 1991 | 97,838 | 23,502 | 74,336 | 29,922 | 104,258 |
| ALL SPECIES | | | | | |
| 1989 | 585,696 | 92,230 | 493,466 | 47,254 | 540,720 |
| 1991 | 508,454 | 95,507 | 412,947 | 117,953 | 530,900 |

Table 6-- Industrial roundwood movement by product and species group, South Carolina, 1991

| Product and species group | Production | Exports | Retained | Imports | Receipts |
|-----------------------------|------------|---------|----------|---------|----------|
| <i>Thousand cubic feet</i> | | | | | |
| Saw logs | | | | | |
| Softwood | 178,816 | 15,502 | 163,314 | 11,490 | 174,804 |
| Hardwood | 24,559 | 1,650 | 22,909 | 3,421 | 26,330 |
| Total | 203,375 | 17,152 | 186,223 | 14,911 | 201,134 |
| Veneer logs | | | | | |
| Softwood | 44,917 | 6,443 | 38,474 | 1,557 | 40,031 |
| Hardwood | 7,017 | 871 | 6,146 | 652 | 6,798 |
| Total | 51,934 | 7,314 | 44,620 | 2,209 | 46,829 |
| Pulpwood^a | | | | | |
| Softwood | 183,394 | 49,783 | 133,611 | 73,548 | 207,159 |
| Hardwood | 66,262 | 20,981 | 45,281 | 25,849 | 71,130 |
| Total | 249,656 | 70,764 | 178,892 | 99,397 | 278,289 |
| Other industrial | | | | | |
| Softwood | 3,489 | 277 | 3,212 | 1,436 | 4,648 |
| Hardwood | 0 | 0 | 0 | 0 | 0 |
| Total | 3,489 | 277 | 3,212 | 1,436 | 4,648 |
| All products | | | | | |
| Softwood | 410,616 | 72,005 | 338,611 | 88,031 | 426,642 |
| Hardwood | 97,838 | 23,502 | 74,336 | 29,922 | 104,258 |
| Total | 508,454 | 95,507 | 412,947 | 117,953 | 530,900 |

^a Includes roundwood chipped.

Table 7--Saw-log volume by destination, source, and species group, South Carolina, 1991

| Destination and source | Species group | | |
|----------------------------------|----------------------------|----------|----------|
| | All species | Softwood | Hardwood |
| | <i>Thousand cubic feet</i> | | |
| South Carolina (retained) | 186,223 | 163,314 | 22,909 |
| Exports to: | | | |
| Georgia | 10,165 | 10,032 | 133 |
| North Carolina | 6,987 | 5,470 | 1,517 |
| Imports from: | | | |
| Georgia | 5,910 | 4,198 | 1,712 |
| Kentucky | 69 | 0 | 69 |
| Mississippi | 69 | 0 | 69 |
| North Carolina | 8,795 | 7,292 | 1,503 |
| Tennessee | 68 | 0 | 68 |

Table 8--Veneer volume by destination, source, and species group, South Carolina, 1991

| Destination and source | Species group | | |
|----------------------------------|----------------------------|----------|----------|
| | All species | Softwood | Hardwood |
| | <i>Thousand cubic feet</i> | | |
| South Carolina (retained) | 44,620 | 38,474 | 6,146 |
| Exports to: | | | |
| North Carolina | 7,314 | 6,443 | 871 |
| Imports from: | | | |
| Georgia | 365 | 0 | 365 |
| North Carolina | 1,844 | 1,557 | 287 |

Table 9--Pulpwood volume by destination, source, and species group, South Carolina, 1991^a

| Destination and source | Species group | | |
|----------------------------------|----------------------------|----------|----------|
| | All species | Softwood | Hardwood |
| | <i>Thousand cubic feet</i> | | |
| South Carolina (retained) | 178,892 | 133,611 | 45,281 |
| Exports to: | | | |
| Alabama | 995 | 995 | 0 |
| Florida | 5,476 | 5,476 | 0 |
| Georgia | 37,903 | 20,909 | 16,994 |
| Louisiana | -- | -- | -- |
| North Carolina | 26,390 | 22,403 | 3,987 |
| Imports from: | | | |
| Georgia | 3,436 | 1,462 | 1,974 |
| North Carolina | 95,705 | 72,086 | 23,619 |
| Virginia | 256 | 0 | 256 |

-- = negligible.

^a Includes roundwood chipped that was delivered to non-pulpmills and then chipped and sold to pulpmills.

Table 10--Other industrial volume by destination, source, and species group, South Carolina, 1991^a

| Destination and source | Species group | | |
|----------------------------------|----------------------------|----------|----------|
| | All species | Softwood | Hardwood |
| | <i>Thousand cubic feet</i> | | |
| South Carolina (retained) | 3,212 | 3,212 | 0 |
| Exports to: | | | |
| Georgia | 89 | 89 | 0 |
| North Carolina | 183 | 183 | 0 |
| Virginia | 5 | 5 | 0 |
| Imports from: | | | |
| Georgia | 453 | 453 | 0 |
| North Carolina | 983 | 983 | 0 |

^a Includes poles, posts, mulch, firewood, log homes, charcoal, and all other industrial mills.

Table 11 – Primary mill residue volume by roundwood type, species group, and residue type, South Carolina, 1991

| Roundwood type and species group | Residue type | | | | |
|--|--------------|--------|--------|---------|----------|
| | All types | Bark | Coarse | Sawdust | Shavings |
| <i>Thousand cubic feet</i> | | | | | |
| Saw logs | | | | | |
| Softwood | 101,180 | 15,292 | 42,601 | 25,448 | 17,839 |
| Hardwood | 17,010 | 2,870 | 8,376 | 5,287 | 477 |
| Total | 118,190 | 18,162 | 50,977 | 30,735 | 18,316 |
| Veneer logs | | | | | |
| Softwood | 24,947 | 3,602 | 11,529 | 9,816 | 0 |
| Hardwood | 6,377 | 762 | 3,646 | 1,969 | 0 |
| Total | 31,324 | 4,364 | 15,175 | 11,785 | 0 |
| Pulpwood | | | | | |
| Softwood | 9,904 | 9,904 | 0 | 0 | 0 |
| Hardwood | 3,202 | 3,202 | 0 | 0 | 0 |
| Total | 13,106 | 13,106 | 0 | 0 | 0 |
| Other industrial^a | | | | | |
| Softwood | 7,247 | 4,327 | 2,920 | 0 | 0 |
| Hardwood | 0 | 0 | 0 | 0 | 0 |
| Total | 7,247 | 4,327 | 2,920 | 0 | 0 |
| Total | | | | | |
| Softwood | 143,278 | 33,125 | 57,050 | 35,264 | 17,839 |
| Hardwood | 26,589 | 6,834 | 12,022 | 7,256 | 477 |
| Total | 169,867 | 39,959 | 69,072 | 42,520 | 18,316 |

^a Includes poles, pilings, posts, and other industrial products.

Table 12--Disposal of residue at primary wood-using plants, by product, species group, and type of residue, South Carolina, 1989 and 1991

| Product and species group | All types | | Bark | | Coarse | | Sawdust | | Shavings | |
|----------------------------|-----------|---------|--------|--------|--------|--------|---------|--------|----------|--------|
| | 1989 | 1991 | 1989 | 1991 | 1989 | 1991 | 1989 | 1991 | 1989 | 1991 |
| <i>Thousand cubic feet</i> | | | | | | | | | | |
| Fiber products | | | | | | | | | | |
| Softwood | 57,480 | 50,088 | 0 | 0 | 54,963 | 49,647 | 0 | 0 | 2,517 | 441 |
| Hardwood | 10,097 | 8,878 | 0 | 0 | 9,943 | 8,790 | 0 | 0 | 154 | 88 |
| Total | 67,577 | 58,966 | 0 | 0 | 64,906 | 58,437 | 0 | 0 | 2,671 | 529 |
| Particleboard | | | | | | | | | | |
| Softwood | 7,098 | 8,020 | 0 | 0 | 0 | 0 | 0 | 469 | 7,098 | 7,551 |
| Hardwood | 110 | 238 | 0 | 0 | 0 | 0 | 0 | 0 | 110 | 238 |
| Total | 7,208 | 8,258 | 0 | 0 | 0 | 0 | 0 | 469 | 7,208 | 7,789 |
| Sawn products | | | | | | | | | | |
| Softwood | 4,803 | 5,421 | 0 | 0 | 4,803 | 5,421 | 0 | 0 | 0 | 0 |
| Hardwood | 1,556 | 2,094 | 0 | 0 | 1,556 | 2,094 | 0 | 0 | 0 | 0 |
| Total | 6,359 | 7,515 | 0 | 0 | 6,359 | 7,515 | 0 | 0 | 0 | 0 |
| Fuel | | | | | | | | | | |
| Softwood | 78,341 | 68,506 | 37,479 | 29,030 | 1,342 | 1,872 | 35,554 | 32,057 | 3,966 | 5,547 |
| Hardwood | 22,748 | 13,984 | 10,489 | 6,049 | 2,157 | 1,005 | 9,804 | 6,814 | 298 | 116 |
| Total | 101,089 | 82,490 | 47,968 | 35,079 | 3,499 | 2,877 | 45,358 | 38,871 | 4,264 | 5,663 |
| Miscellaneous | | | | | | | | | | |
| Softwood | 10,230 | 11,153 | 4,537 | 4,093 | 113 | 34 | 2,942 | 2,726 | 2,638 | 4,300 |
| Hardwood | 2,366 | 1,204 | 1,220 | 763 | 324 | 70 | 766 | 336 | 56 | 35 |
| Total | 12,596 | 12,357 | 5,757 | 4,856 | 437 | 104 | 3,708 | 3,062 | 2,694 | 4,335 |
| Not used | | | | | | | | | | |
| Softwood | 212 | 91 | 127 | 2 | 18 | 76 | 66 | 13 | 1 | 0 |
| Hardwood | 168 | 192 | 28 | 22 | 9 | 63 | 130 | 107 | 1 | 0 |
| Total | 380 | 283 | 155 | 24 | 27 | 139 | 196 | 120 | 2 | 0 |
| All products | | | | | | | | | | |
| Softwood | 158,164 | 143,279 | 42,143 | 33,125 | 61,239 | 57,050 | 38,562 | 35,265 | 16,220 | 17,839 |
| Hardwood | 37,045 | 26,590 | 11,737 | 6,834 | 13,989 | 12,022 | 10,700 | 7,257 | 619 | 477 |
| Total | 195,209 | 169,869 | 53,880 | 39,959 | 75,228 | 69,072 | 49,262 | 42,522 | 16,839 | 18,316 |

Table 13--Roundwood timber products output, by product and species group, Southern Coastal Plain, 1989 and 1991

| Product and species group | Year | | Change |
|-----------------------------|----------------------------|---------|----------------|
| | 1989 | 1991 | |
| | <i>Thousand cubic feet</i> | | <i>Percent</i> |
| Saw logs | | | |
| Softwood | 71,456 | 65,981 | -7.7 |
| Hardwood | 9,822 | 7,473 | -23.9 |
| Total | 81,278 | 73,454 | -9.6 |
| Veneer logs | | | |
| Softwood | 6,405 | 5,671 | -11.5 |
| Hardwood | 3,592 | 2,148 | -40.2 |
| Total | 9,997 | 7,819 | -21.8 |
| Pulpwood^a | | | |
| Softwood | 41,712 | 44,677 | 7.1 |
| Hardwood | 19,002 | 15,615 | -17.8 |
| Total | 60,714 | 60,292 | -0.7 |
| Other industrial | | | |
| Softwood | 700 | 1,232 | 76.0 |
| Hardwood | 0 | 0 | 0 |
| Total | 700 | 1,232 | 76.0 |
| All industrial | | | |
| Softwood | 120,273 | 117,561 | -2.3 |
| Hardwood | 32,416 | 25,236 | -22.2 |
| Total | 152,689 | 142,797 | -6.5 |

^a Includes roundwood that was delivered to non-pulpmills and then chipped and sold to pulpmills (7,669,000 cubic feet in 1989 and 6,231,000 cubic feet in 1991).

Table 14—Roundwood timber products output, by product and species group, Northern Coastal Plain, 1989 and 1991

| Product and species group | Year | | Change |
|-----------------------------|----------------------------|---------|----------------|
| | 1989 | 1991 | |
| | <i>Thousand cubic feet</i> | | <i>Percent</i> |
| Saw logs | | | |
| Softwood | 81,455 | 66,924 | -17.8 |
| Hardwood | 14,095 | 7,427 | -47.3 |
| Total | 95,550 | 74,351 | -22.2 |
| Veneer logs | | | |
| Softwood | 21,247 | 19,054 | -10.3 |
| Hardwood | 4,563 | 2,414 | -47.1 |
| Total | 25,810 | 21,468 | -16.8 |
| Pulpwood^a | | | |
| Softwood | 89,091 | 59,166 | -33.6 |
| Hardwood | 31,831 | 22,897 | -28.1 |
| Total | 120,922 | 82,063 | -32.1 |
| Other industrial | | | |
| Softwood | 2,965 | 1,739 | -41.3 |
| Hardwood | 0 | 0 | 0 |
| Total | 2,965 | 1,739 | -41.3 |
| All industrial | | | |
| Softwood | 194,758 | 146,883 | -24.6 |
| Hardwood | 50,489 | 32,738 | -35.2 |
| Total | 245,247 | 179,621 | -26.8 |

^a Includes roundwood that was delivered to non-pulpmills and then chipped and sold to pulpmills (4,753,000 cubic feet in 1989 and 5,949,000 cubic feet in 1991).

Table 15—Roundwood timber products output, by product and species group, Piedmont, 1989 and 1991

| Product and species group | Year | | Change |
|-----------------------------|----------------------------|---------|----------------|
| | 1989 | 1991 | |
| | <i>Thousand cubic feet</i> | | <i>Percent</i> |
| Saw logs | | | |
| Softwood | 54,819 | 45,911 | -16.2 |
| Hardwood | 13,481 | 9,659 | -28.4 |
| Total | 68,300 | 55,570 | -18.6 |
| Veneer logs | | | |
| Softwood | 19,289 | 20,192 | 4.7 |
| Hardwood | 2,137 | 2,455 | 14.9 |
| Total | 21,426 | 22,647 | 5.7 |
| Pulpwood^a | | | |
| Softwood | 69,341 | 79,551 | 14.7 |
| Hardwood | 28,052 | 27,750 | -1.1 |
| Total | 97,393 | 107,301 | 10.2 |
| Other industrial | | | |
| Softwood | 514 | 518 | 0.8 |
| Hardwood | 127 | 0 | -100.0 |
| Total | 641 | 518 | -19.2 |
| All industrial | | | |
| Softwood | 143,963 | 146,172 | 1.5 |
| Hardwood | 43,797 | 39,864 | -9.0 |
| Total | 187,760 | 186,036 | -0.9 |

^a Includes roundwood that was delivered to non-pulpmills and then chipped and sold to pulpmills (4,773,000 cubic feet in 1989 and 6,217,000 cubic feet in 1991).

Johnson, Tony G.; Davenport, Edgar L. 1993. South Carolina's timber industry—an assessment of timber product output and use, 1991. Resour. Bull. SE-136. Asheville, NC: U.S. Department of Agriculture, Forest Service, Southeastern Forest Experiment Station. 18 pp.

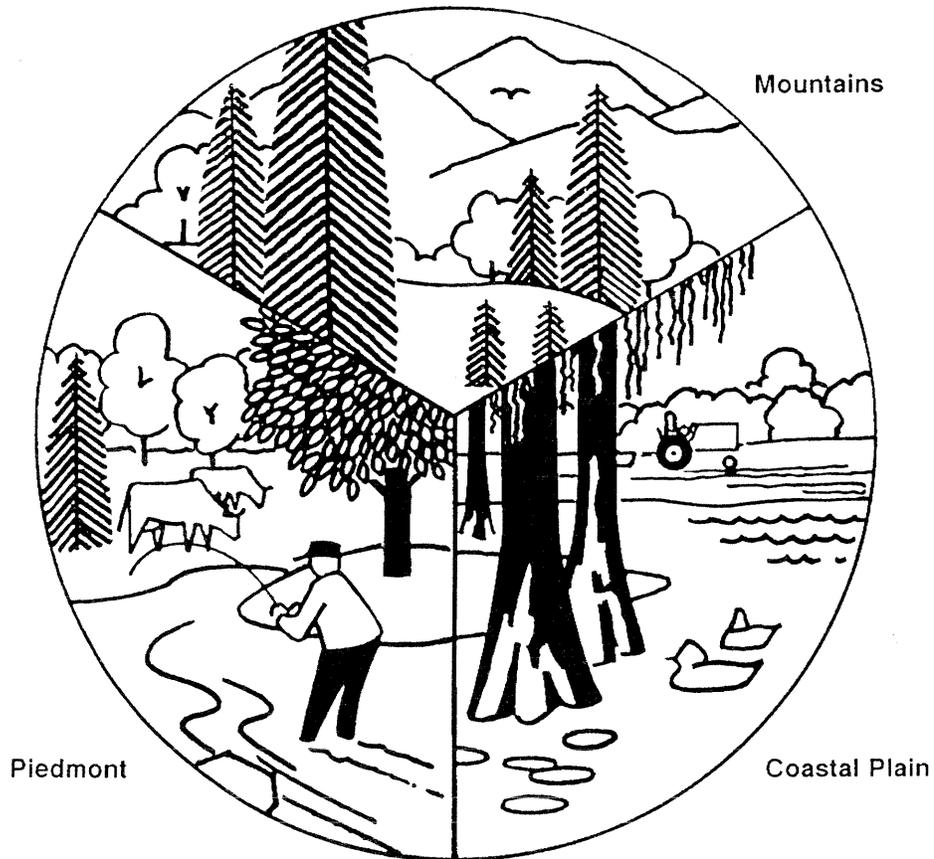
In 1991, roundwood output from South Carolina's forests totaled 508 million cubic feet, down 13 percent from 1989. Mill byproducts generated from primary processors declined an equal rate to 170 million cubic feet. Almost 100 percent of the residues were used, mostly for fuel and fiber products. Pulpwood remained the leading roundwood product at 250 million cubic feet; saw logs was second with 203 million cubic feet; veneer production was third at 52 million cubic feet. One hundred and eight mills were operating in 1991, nine fewer than in 1989.

KEYWORDS: Roundwood, residues, pulpwood, saw logs, veneer logs, receipts, exports, imports, wood movement, mills.

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KEYWORDS: Roundwood, residues, pulpwood, saw logs, veneer logs, receipts, exports, imports, wood movement, mills.



Southeastern Forest Experiment Station

Established 1921

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

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

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