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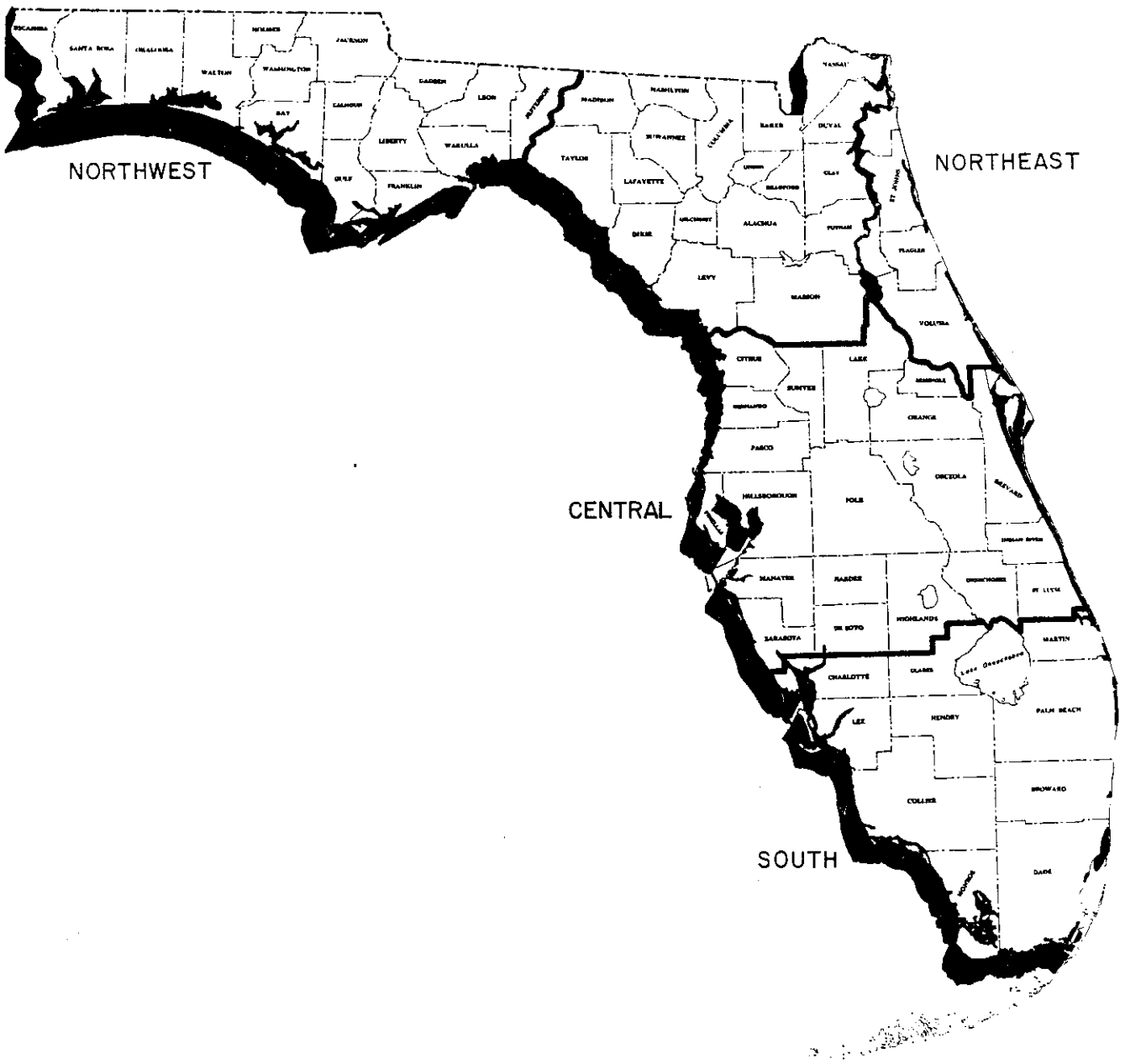

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Highlights

Nearly 480 million cubic feet of industrial roundwood products were harvested from Florida's forests during 1987, 48 percent more than in 1977. Saw logs and pulpwood were the leading roundwood products, with pulpwood accounting for 60 percent and saw logs for 30 percent of the 1987 total output. Output of all major industrial roundwood products increased between 1977 and 1987--saw logs by 77 percent, veneer logs by 163 percent, and pulpwood by 26 percent.

Byproduct output rose from 99 million cubic feet in 1977 to 170 million cubic feet in 1987. Only 285,000 cubic feet of residues, less than 1 percent of the total produced, were not used. Improvements have been made in the use of all types of residue--bark, coarse, and fines. Plant byproducts are used mainly for fiber products and industrial fuel.

A total of 143 primary wood-using plants operated in Florida during 1987, a net increase of 3 mills since 1977. The number of sawmills and veneer mills has declined since 1977, while the number of pulpmills remained the same. In contrast, the number of plants manufacturing other miscellaneous industrial timber products has increased by 15. Florida was a net importer of industrial roundwood in 1987; mill receipts of more than 537 million cubic feet exceeded timber products drain by 12 percent. Average annual removals of growing stock from Florida's timberland totaled nearly 541 million cubic feet between 1980 and 1987, 35 percent more than from 1970 to 1979.

Keywords: Saw logs, pulpwood, veneer logs, mill residues.

Background and Study Methods

The sixth forest inventory of Florida was completed in 1987; it provides estimates of inventories, growth, and removals of timber on Florida's timberland. Currently, Florida's timber production is surveyed roughly every 6 years. To supplement the inventory information collected during these surveys, all primary wood-using plants in the State are periodically canvassed to determine amount and source of wood receipts, annual timber product drain in each county, and interstate and cross-regional movement of industrial roundwood products. A 100-percent canvass of all primary wood-processors was conducted in Florida every 2 years between 1969 and 1983. Since 1984, canvasses have been conducted annually. Out-of-State mills using Florida logs or bolts are also canvassed. Each mill is canvassed by mail or personal contact. These studies are a cooperative project involving the Southeastern Forest Experiment Station in the USDA Forest Service and the Division of Forestry in the Florida Department of Agriculture and Consumer Services. This Bulletin reports the findings of the 1987 canvass and presents the changes in product output and residue use that have occurred since 1977.

Since one objective of commodity drain surveys is to determine the volume of roundwood timber products removed from the State's timberland in a given year, only primary wood-using mills are canvassed. Primary wood-using mills are those that process roundwood or chips received from the forest. Examples of industrial roundwood products are saw logs, pulpwood, veneer logs, poles, and cooperage logs. Plants that utilize processed products, such as lumber, in the manufacture of secondary wood products, such as furniture, are not canvassed. They are excluded because they have little direct control on the removal of roundwood from timberland and usually do not actively harvest roundwood. The total harvest of wood used by primary processing plants is referred to as "industrial roundwood production" or "industrial timber product output." All primary mills are canvassed for volume of roundwood receipts and source by county.

For inventory and reporting purposes, Forest Inventory and Analysis (FIA), divides Florida into survey units: Northwest, Northeast, Central, and South Florida (fig. 1). Since the output of industrial roundwood products

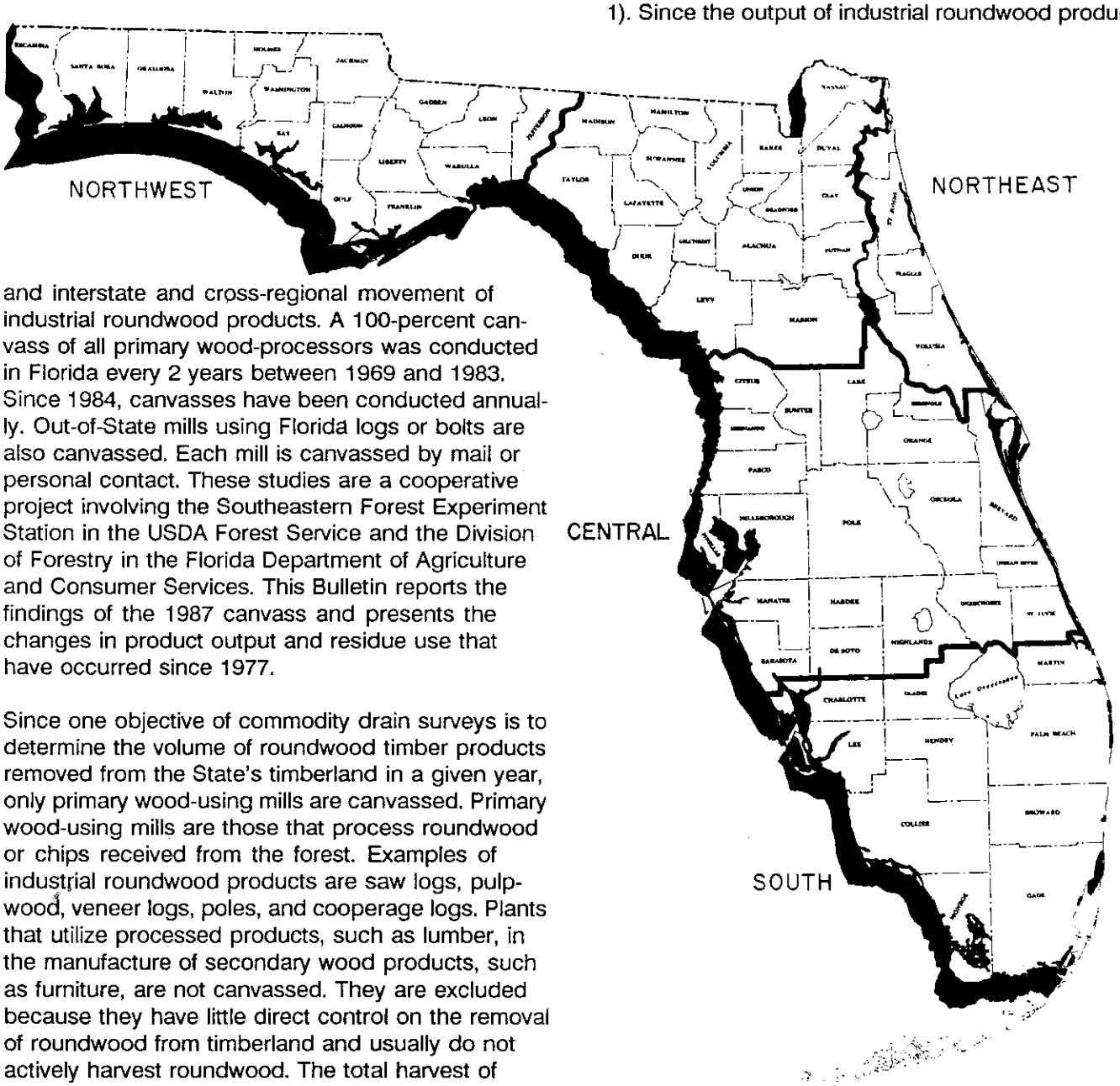

Figure 1--Forest survey regions in Florida.

in South Florida is low in relation to other FIA survey units, the Central and South Units were combined for reporting purposes in this Bulletin and are referred to as "Central-South Florida."

Resource Trends

Between 1980 and 1987, timberland in Florida decreased by 682,000 acres, or by more than 4 percent. That rate of timberland diversion is about the same as in the previous decade. More than half of the lost timberland was cleared for urban development. During the same period, about 296,000 acres were harvested annually and remained in timberland. Annual removals of growing stock rose by 35 percent since the previous survey and in 1987 totaled nearly 541 million cubic feet. Bechtold and others[1] show that softwood removals increased by 48 percent to 474 million cubic feet, while hardwood removals declined by 18 percent to 66 million cubic feet.

Utilization of growing-stock has improved markedly. In 1979, 72 percent of all growing-stock removals were used for products (table 1). By 1987, that figure rose to 81 percent. Loses to logging residues and trees felled and left in land-clearing operations both declined. Improved utilization translated into a greater volume of roundwood product output on an approximately equal area of timber harvested.

Industrial Roundwood Product Output

Industrial roundwood product output in 1987 was almost 480 million cubic feet, an increase of 48 percent from the 323 million cubic feet produced in 1977 (table 2). Softwood roundwood drain totaled 453 million cubic feet and accounted for 94 percent of the total output in 1987. Output of softwood roundwood products for 1987 was 56 percent more than in 1977. Hardwood roundwood product output totaled over 26 million cubic feet, 20 percent less than in 1977. The leading roundwood products throughout this 10-year period were pulpwood and saw logs, which respectively accounted for 60 and 30 percent of the roundwood produced in 1987. Collectively, output of these products for both softwood and hardwood totaled nearly 431 million cubic feet.

Saw Logs

Saw-log output in 1977 totaled 80.3 million cubic feet (438.0 million board feet, International 1/4-inch rule). Output rose dramatically between 1977 and 1979, almost entirely due to softwood increases. Between 1977 and 1979, several sawmills modernized and increased capacity. In addition, several new mills came on line. After 1979, output leveled somewhat for the remainder of the period. Production for the period was highest in 1986 at 149.9 million cubic feet, and dropped slightly in 1987 to 142.3 million cubic feet (777.1 million board feet). Softwoods made up between 93 and 98 percent of the total saw-log output for most of the period. Softwood saw-log production increased during the period and accounted for 26 percent of the total softwood roundwood output of all products in 1977 and for 31 percent in 1987. On the other hand, hardwood saw logs accounted for 18 percent of production in 1977 but for only 12 percent in 1987.

Veneer Logs

Output of veneer logs for 1987 totaled 29.2 million cubic feet (150.0 million board feet), more than 2.6 times the output for 1977. Veneer logs accounted for 3 percent of the annual roundwood output in 1977 and for 7 percent in 1987. Output of softwood veneer logs, as with output of saw logs, rose significantly between 1977 and 1987, from 7.9 million cubic feet to 27.7 million cubic feet. Veneer-log output responded to an upturn in the economic situation following slow production years in the early 1980's. The veneer industry in Florida continues to be dominated by softwood, with pine plywood the principal product; output of hardwood veneer logs declined from 3.2 million cubic feet to 1.5 million cubic feet. Hardwood veneer-log production was greatest in 1984 at 4.7 million cubic feet. Although the current situation looks favorable, reconstituted panel products may capture portions of the plywood market in the future. As yet, no mills producing structural panels are in operation in Florida.

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[1]Bechtold, William A.; Brown, Mark J.; Sheffield, Raymond M. 1990. Florida's forests, 1987. Resour. Bull. SE-110. Asheville, NC: U.S. Department of Agriculture, Forest Service, Southeastern Forest Experiment Station. 83 pp.

Pulpwood

Output of round pulpwood (including roundwood chipped) generally increased during the period. It rose from 228.7 million cubic feet (2.96 million cords) in 1977 to 288.5 million cubic feet in 1987. Some small declines in output occurred in 1985 and 1986. Pulpwood has historically been the leading roundwood product in Florida, as in most of the Southeast. Between 1977 and 1987, pulpwood accounted for as much as 71 percent of total annual roundwood output and for as little as 56 percent. Softwoods accounted for 88 to 92 percent of annual pulpwood production. In addition to roundwood, about 69.9 million cubic feet of primary mill residues were utilized as pulp furnish in 1987. This material accounted for about 20 percent of the total output of 358.4 million cubic feet.

Miscellaneous Industrial Products

Other industrial roundwood products cut and processed in Florida include poles, commercial posts, and mulch. Industrial and domestic fuelwood are excluded from this report because we had no reliable method for estimating their production. In 1987, output of miscellaneous industrial timber products totaled 20.0 million cubic feet, about 4 percent of the total industrial timber products output. Nearly all of this output was softwood, and mulch accounted for the largest volume.

Logging Residue

In the process of harvesting timber products, considerable volume can be left in the woods. Logging residue includes all wood fiber left behind from trees cut during logging operations and not subsequently used. Examples are high stumps, unutilized merchantable-size tops, and merchantable-size whole trees that are cut or knocked over and left. Results of 100 random samples of active logging operations across the State show that between 1980 and 1986, some 31.4 million cubic feet of growing stock were left in the woods annually in the form of logging residues. The loss is the equivalent of 404,000 cords of pulpwood. Between 1979 and 1987, however, the loss was reduced by 17 percent.

Number of Mills and Receipts

The number of primary wood-using plants increased from 140 in 1977 to 143 in 1987 but has fluctuated throughout the decade (table 3). The number of operating mills peaked at 180 in 1981, 137 of these were sawmills. Opening and closing of sawmills caused most of the annual fluctuations, but the increase in number of mills producing miscellaneous products was the reason for the overall net increase in mill numbers late in the period.

Overall, number of sawmills declined. During recession years, many small sawmills shut down. When lumber demand and lumber prices increase, mills reopen or new small mills come on line. Meanwhile, in the long term, renovation, expansion, and modernization have been reducing the number of sawmills operating in Florida and increasing their average production. In 1977, 104 sawmills had receipts of nearly 467 million board feet (85.6 million cubic feet). By 1987, 97 mills had receipts of nearly 826 million board feet. A much greater share of production was concentrated at fewer mills; 7 mills, each with annual receipts in excess of 50 million board feet, accounted for nearly 65 percent of the total saw-log receipts for all mills.

Ten pulpmills were in operation in Florida in 1987, the same as in 1977. The pulping industry also experienced renovation and expansion; daily pulping capacity increased from 10,400 tons to 11,600 tons. Annual total mill receipts rose from 3.6 million cords (277.0 million cubic feet) in 1977 to 4.1 million cords

(319.4 million cubic feet) by 1987. Six of the 10 pulpmills are in the Northeast region and 4 are in the Northwest region (fig. 2).

Ten veneer and plywood mills operated in Florida between 1977 and 1984. By 1987, that number of mills was reduced to five. However, as with other products, technological advances have increased the efficiency of processing. Mill receipts for the manufacture of softwood and hardwood plywood and for veneer products increased from around 68 million board feet in 1977 to over 156 million board feet in 1987.

The number of plants manufacturing other miscellaneous products, such as poles, posts, and mulch, increased from 16 in 1977 to 31 in 1987. Of these 31 miscellaneous mills, 18 are mulch mills that opened in 1984 and are still operating. These mulch mills are located primarily in the Northeast and Central-South regions. In 1987 these mills had receipts of 13.1 million cubic feet of whole-tree cypress.

Roundwood Movement

In both 1977 and 1987, Florida's forest products industry was a net importer of roundwood, particularly softwood. During this 10-year period, however, imports declined by a greater proportion than exports. In 1977, industrial roundwood receipts exceeded timber drain by 19 percent; in 1987, receipts of 537.5 million cubic feet exceeded 480 million cubic feet of industrial roundwood drain by only 12 percent (table 4). In

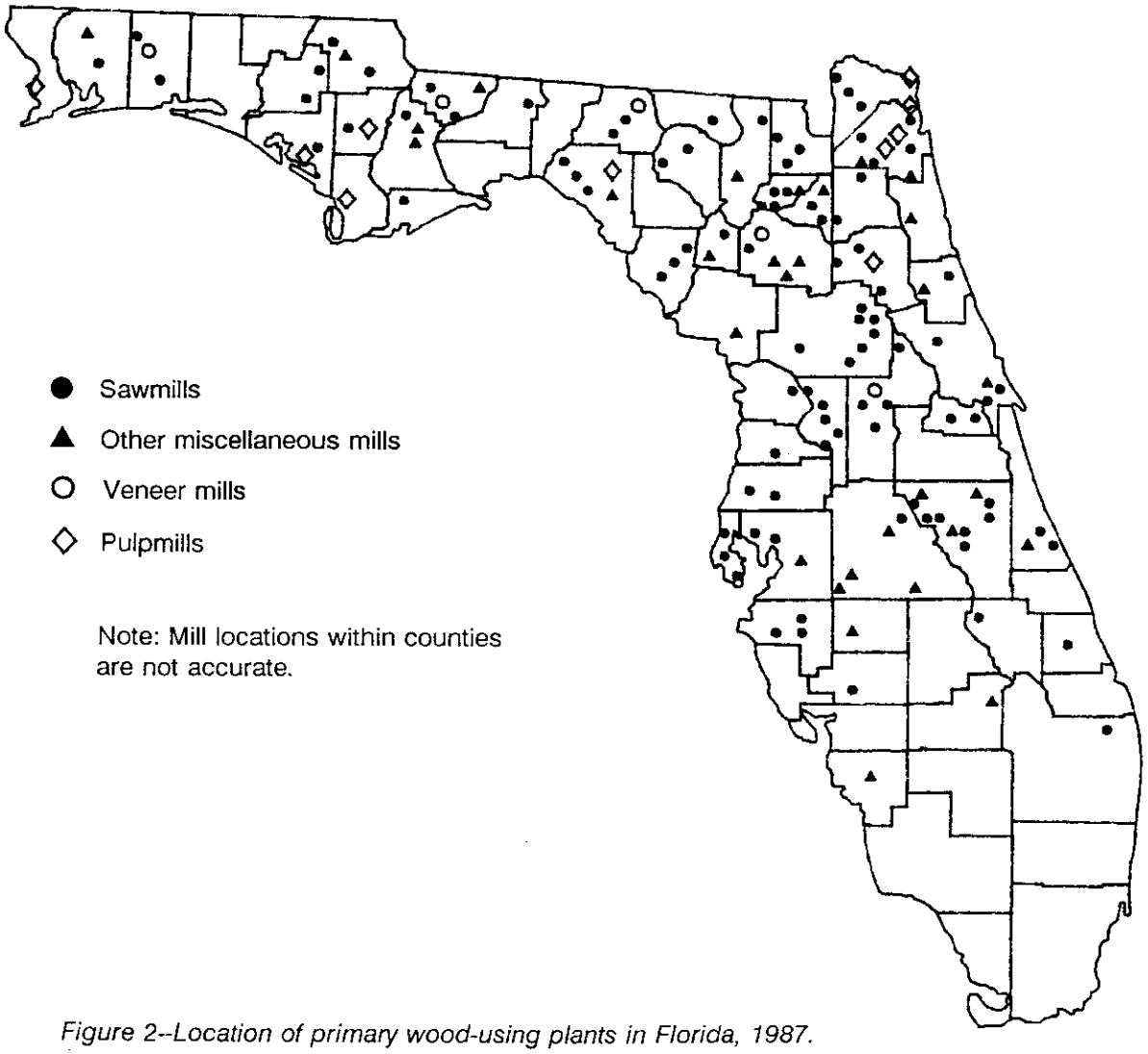

Figure 2--Location of primary wood-using plants in Florida, 1987.

1987, more than 9 percent of the State's roundwood output, or 43.1 million cubic feet, was shipped to other States, while 100.7 million cubic feet were imported from neighboring States. In 1977, hardwood exports almost equaled imports. For softwoods, imports of 99.8 million cubic feet are more than 2.5 times the volume of exports.

In 1987, receipts of most major industrial products, both softwood and hardwood, exceeded timber drain (table 5). Imports of softwood saw log, veneer log, and pulpwood exceeded exports by 298, 74, and 87 percent, respectively. Imports of hardwood pulpwood exceeded exports by more than fivefold.

Plant Byproduct Use

In 1987, 169.6 million cubic feet of residues were generated at wood-using mills in Florida during the processing of primary timber products. Residue generation is up 72 percent since 1977 (table 6). Overall, mill utilization has become more efficient, reducing the volume of residues generated per unit volume of wood processed.

Of the total volume of residues generated (including bark, coarse, and fine), 45 percent was used as a roundwood substitute in the manufacture of a primary product. More than 49.1 million cubic feet of residues were used in the production of fiber products. About 15 percent of the total output of fiber products was from residues. More than 23.6 million cubic feet of residues were used in the manufacture of other industrial products such as particleboard. About 4.0 million cubic feet of residues, primarily veneer-log cores, were substituted for roundwood in the manufacture of sawn products such as landscape timbers. An additional 92.6 million cubic feet of residues were used as industrial or domestic fuel. Less than 1 percent of all residues were not used. Mill residues accounted for about 14 percent of total primary product production in 1987.

More than 99 percent of the mill residues generated in each class (coarse, fine, and bark) during 1987 were utilized. Bark residue is used primarily for industrial fuel; about 8 percent of the total bark residue is used for landscape nuggets and mulch (table 7). Coarse residues are used primarily for fiber products (75 percent), miscellaneous products such as reconstituted board products (11 percent), industrial fuel (7 percent), and sawn or specialty products (6 percent). Fine residues (sawdust and shavings) are used principally as industrial fuel (74 percent). Five percent of the fine residues generated are used in the manufacture of particleboard, and 15 percent for miscellaneous products.

Regional Trends

Northeast Region

Average annual softwood removals of timber for all uses between 1980 and 1987 totaled 290.3 million cubic feet. That average is 56 percent higher than the average between 1970 and 1980. Hardwood removals increased by 18 percent to 39.7 million cubic feet for the latest survey. This corresponds to changes in annual timber products output in this region. Timber products output totaled 298.8 million cubic feet in 1987, up 46 percent from 1977 (table 8). Softwood accounted for 95 percent of the total output in 1987. Sixty-two percent of the State's total roundwood output for 1987, including both softwood and hardwood, was cut from this 21-county Northeast region.

In 1987, pulpwood accounted for 61 percent of total industrial output in Northeast Florida; saw logs accounted for 30 percent. Seventy-two percent of the State's 29.2 million cubic feet of veneer logs cut during 1987 came from this region.

The Northeast region is a net importer of industrial roundwood. Mills in this region imported more than 49.7 million cubic feet, including about 46 million cubic feet from out of State, primarily from Georgia, and 3.7 million cubic feet from other regions within State. Exports from this region totaled 30.6 million cubic feet.

Northwest Region

The 16-county Northwest region accounted for 32 percent of the State's industrial roundwood output in 1987. Total output of industrial roundwood was almost 153.4 million cubic feet in 1987, 50 percent more than 1977 (table 9). Softwood accounted for 92 percent of the output. As in the Northeast region, pulpwood and saw logs accounted for most of the output of industrial timber products; pulpwood accounted for 63 percent and saw logs for 30 percent.

The Northwest region is also a net importer of industrial roundwood. In 1987, imports totaled 44.7 million cubic feet and exports totaled 14.2 million cubic feet. Pulpwood accounted for the bulk of imports. Almost all of the pulpwood was imported from Georgia and Alabama.

Central-South Region

This 30-county region includes all of southern Florida from Key West to a northern boundary comprised of Citrus, Sumter, Lake, and Seminole Counties. Timber production is not as significant in this region as in the two northern regions; crop production, grazing, tourism, and recreation dominate land use. Due to increased urbanization and continued agricultural and grazing use, timberland area shrank by 10 percent between 1980 and 1988 and accounted for only 20 percent of the region's total land area in 1988.

Softwood growing-stock removals for the period between 1980 and 1987 amounted to 42.6 million cubic feet annually, about 9 percent of the State's total softwood removals. Land use changes and land clearing accounted for a relatively large proportion of roundwood removals in the Central-South region. For this reason, timber production accounted for a smaller proportion of total removals in that region than elsewhere.

Annual removals of hardwood growing stock totaled 5.4 million cubic feet, down 75 percent from the previous survey period. Hardwood removals in this region account for about 8 percent of the State total.

Timber products output of 27.8 million cubic feet in 1987 accounted for about 6 percent of the State's total industrial timber products output (table 10). Softwood output increased by 69 percent between 1977 and 1987 to 26.6 million cubic feet; hardwood output declined by 23 percent to 1.2 million cubic feet.

About 63 percent of the 1987 output was retained for use within this region. Central-South Florida supports only 50 mills, including 37 small sawmills and 12 miscellaneous product mills producing primarily posts and mulch. Including both wood movement between other regions within State and wood exported to other States, the Central-South region is a net exporter of industrial roundwood. About 96 percent of all exports are to Florida's northern regions; only 4 percent are out of State. Pulpwood accounts for a majority of the exports.

Definition of Terms

Consumption. The quantity of a commodity, such as pulpwood, utilized.

Exports. The volume of roundwood products 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, cooperage logs, or fuelwood.

Industrial timber products. All timber products manufactured from either roundwood or plant byproducts, except firewood.

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 which receive roundwood or chips from roundwood for the manufacture of products such as veneer and lumber.

Receipts. The quantity or volume of industrial roundwood products 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 products 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 pulpmills for use as fiber. Includes chipped tops, jump sections, whole trees, and pulpwood sticks.

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 a 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.

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	0.18296 cubic foot = 1 board foot
	5.47 board feet = 1 cubic foot
Hardwood	0.18866 cubic foot = 1 board foot
	5.30 board feet = 1 cubic foot
Veneer logs	
Softwood	0.19585 cubic foot = 1 board foot
	5.11 board feet = 1 cubic foot
Hardwood	0.17362 cubic foot = 1 board foot
	5.76 board feet = 1 cubic foot
Pulpwood[b]	
Softwood	76.99 cubic feet/cord
Hardwood	79.33 cubic feet/cord

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

[b]Cubic feet of solid wood per cord.

Table 1--Annual growing-stock removals from timberland, by item and species group, Florida, 1979, and 1980-86

Item	1979			1980-1986		
	All species	Softwood	Hardwood	All species	Softwood	Hardwood
			Thousand cubic feet			
Roundwood products	391,894	355,738	36,156	436,482	400,877	35,605
Logging residues	38,081	28,744	9,337	31,440	21,199	10,241
Other removals	111,737	69,143	42,594	72,765	52,167	20,598
Total	541,712	453,625	88,087	540,687	474,243	66,444

Table 2--Output of industrial roundwood products by year, product and species group, Florida, 1977-87

Year	All products	Product and species group			
		Saw logs	Veneer logs	Pulpwood[a]	Other industrial
		Thousand cubic feet			
			SOFTWOOD		
1977	290,480	74,421	7,910	204,669	3,480
1979	371,791	124,671	12,055	227,903	7,162
1981	378,128	107,611	15,180	246,259	9,078
1983	424,175	138,914	21,990	251,211	12,060
1984	410,118	133,402	26,548	240,224	9,944
1985	389,091	133,779	26,153	215,584	13,575
1986	415,117	140,299	24,555	236,560	13,703
1987	453,543	139,079	27,734	267,032	19,698
			HARDWOOD		
1977	33,078	5,895	3,183	24,000	0
1979	42,094	9,625	3,749	28,720	0
1981	38,514	6,866	2,855	28,793	0
1983	37,419	5,012	2,722	28,640	1,045
1984	31,736	5,320	4,735	21,681	0
1985	31,978	10,123	3,302	18,553	0
1986	28,729	9,643	1,538	17,440	108
1987	26,415	3,205	1,450	21,438	322
			ALL SPECIES		
1977	323,558	80,316	11,093	228,669	3,480
1979	413,885	134,296	15,804	256,623	7,162
1981	416,642	114,477	18,035	275,052	9,078
1983	461,594	143,926	24,712	279,851	13,105
1984	441,854	138,722	31,283	261,905	9,944
1985	421,069	143,902	29,455	234,137	13,575
1986	443,846	149,942	26,093	254,000	13,811
1987	479,958	142,284	29,184	288,470	20,020

[a]Includes roundwood chipped at other primary wood-using plants.

Table 3--Number of primary wood-using plants, by year, industry and forest survey region, Florida, 1977-87

Industry	Total	North-east	North-west	Central-South
		1977		
Sawmills	104	50	17	37
Veneer mills	10	4	4	2
Pulpmills	10	6	4	0
Other misc.	16	3	7	6
All plants	140	63	32	45
		1979		
Sawmills	112	52	21	39
Veneer mills	10	5	4	1
Pulpmills	10	6	4	0
Other misc.	16	5	8	3
All plants	148	68	37	43
		1981		
Sawmills	137	55	24	58
Veneer mills	13	5	6	2
Pulpmills	10	6	4	0
Other misc.	20	6	10	4
All plants	180	72	44	64
		1983		
Sawmills	108	57	18	33
Veneer mills	10	5	4	1
Pulpmills	9	5	4	0
Other misc.	16	5	5	6
All plants	143	72	31	40

Industry	Total	North-east	North-west	Central South
		1984		
Sawmills	105	53	17	35
Veneer mills	10	5	3	2
Pulpmills	9	5	4	0
Other misc.	24	8	6	10
All plants	148	71	30	47
		1985		
Sawmills	104	48	17	39
Veneer mills	9	4	3	2
Pulpmills	9	5	4	0
Other misc.	24	6	6	22
All plants	146	63	30	63
		1986		
Sawmills	106	52	16	38
Veneer mills	6	2	2	2
Pulpmills	9	5	4	0
Other misc.	30	10	6	14
All plants	151	69	28	54
		1987		
Sawmills	97	46	14	37
Veneer mills	5	2	2	1
Pulpmills	10	6	4	0
Other misc.	31	14	5	12
All plants	143	68	25	50

Table 4--Industrial roundwood movement, by year and species group, Florida, 1977 and 1987

Year	Output	Retained	Exports	Imports	Receipts
			Thousand cubic feet		
			SOFTWOOD		
1977	290,480	252,425	38,055	99,830	352,255
1987	453,543	415,187	38,356	74,189	489,376
			HARDWOOD		
1977	33,078	23,046	10,032	10,286	33,332
1987	26,415	21,611	4,804	26,506	48,117
			ALL SPECIES		
1977	323,558	275,471	48,087	110,116	385,587
1987	479,958	436,798	43,160	100,695	537,493

Table 5--Industrial roundwood movement by product and species group, Florida, 1987

Product	Species group				
	Production	Exports	Retained	Imports	Receipts
	Thousand cubic feet				
Saw logs					
Softwood	139,079	2,954	136,125	11,755	147,880
Hardwood	3,205	156	3,049	293	3,342
Total	142,284	3,110	139,174	12,048	151,222
Veneer logs					
Softwood	27,734	1,898	25,836	3,297	29,133
Hardwood	1,450	394	1,056	233	1,289
Total	29,184	2,292	26,892	3,530	30,422
Pulpwood[a]					
Softwood	267,032	31,539	235,493	58,850	294,343
Hardwood	21,438	4,254	17,184	25,979	43,163
Total	288,470	35,793	252,677	84,829	337,506
Other					
Softwood	19,698	1,965	17,733	287	18,020
Hardwood	322	0	322	1	323
Total	20,020	1,965	18,055	288	18,343
All products					
Softwood	453,543	38,356	415,187	74,189	489,376
Hardwood	26,415	4,804	21,611	26,506	48,117
Total	479,958	43,160	436,798	100,695	537,493

[a]Includes roundwood chipped.

Table 6--Output of timber products from plant byproducts, by year, product and species group, Florida, 1977-87

Year	All uses	Product and species group				
		Fiber products	Sawn products	Other industrial[a]	Fuelwood, domestic and industrial	Not used
		Thousand cubic feet				
		SOFTWOOD				
1977	90,789	30,876	1,534	14,916	40,402	3,061
1979	103,777	32,526	158	19,463	48,972	2,658
1981	125,994	40,720	0	19,205	62,257	3,812
1983	145,326	47,092	480	19,023	78,456	275
1984	146,379	45,594	467	19,202	80,680	436
1985	144,037	46,071	480	25,722	70,189	1,575
1986	155,647	430,73	5,751	21,048	83,400	2,375
1987	161,393	48,694	4,025	22,476	85,927	271
		HARDWOOD				
1977	8,019	2,579	2	1,274	3,964	200
1979	11,915	3,262	0	1,526	6,484	643
1981	11,015	2,138	0	2,194	6,347	336
1983	10,958	1,473	5	1,656	7,726	98
1984	12,172	1,849	23	1,024	9,256	20
1985	13,216	1,153	0	1,916	9,131	1,016
1986	11,105	697	0	771	6,525	3,112
1987	8,212	402	0	1,086	6,709	15
		ALL SPECIES				
1977	98,808	33,455	1,536	16,190	44,366	3,261
1979	115,692	35,788	158	20,989	55,456	3,301
1981	137,009	42,858	0	21,399	68,604	4,148
1983	156,284	48,565	485	20,679	86,182	373
1984	158,551	47,443	490	20,226	89,936	456
1985	157,253	47,224	480	27,638	79,320	2,591
1986	166,752	43,770	5,751	21,819	89,925	5,487
1987	169,605	49,096	4,025	23,562	92,636	286

[a]Other includes particleboard, charcoal, and other miscellaneous.

Table 7--The use of residues at primary wood-using plants, by type of residue, species group and use, Florida, 1987

Type of residue and species group	Total	Use						
		Fiber products	Particle board	Charcoal	Sawn products	Industrial fuel	Domestic fuel	Miscellaneous[a]
					Thousand cubic feet			
Bark								
Softwood	53,865	0	0	439	0	48,718	7	4,618
Hardwood	6,127	0	0	71	0	5,954	17	85
Total	59,992	0	0	510	0	54,672	24	4,703
Coarse								
Softwood	63,110	47,595	123	201	4,025	3,934	23	7,068
Hardwood	1,165	402	0	192	0	303	43	225
Total	64,275	47,997	123	393	4,025	4,237	66	7,293
Fine								
Softwood	44,418	1,098	2,307	1,132	0	33,245	0	6,590
Hardwood	921	0	0	130	0	393	0	383
Total	45,339	1,098	2,307	1,262	0	33,638	0	6,973

[a]Includes mulch, bedding, etc.

Table 8--Output of industrial products, by county and species group, Northeast Florida, 1977-87

County	1977	1979	1981	1983	1984	1985	1986	1987
				Thousand cubic feet				
				SOFTWOOD				
Alachua	9,984	14,044	8,749	8,724	11,089	10,338	12,562	14,533
Baker	14,238	19,152	14,438	15,197	17,491	13,775	12,404	15,788
Bradford	9,718	16,781	8,079	11,119	9,184	7,159	8,654	13,299
Clay	6,225	8,624	9,859	9,493	10,519	9,777	11,374	14,834
Columbia	13,068	18,518	14,126	19,887	17,484	16,652	13,207	19,724
Dixie	10,005	10,347	8,693	5,882	9,937	5,902	7,677	11,274
Duval	6,221	5,431	10,715	13,574	8,163	11,315	8,739	12,512
Flagler	3,526	11,502	5,106	6,833	8,283	10,477	10,461	12,716
Gilchrist	5,853	8,002	7,441	6,160	5,825	7,695	6,982	8,850
Hamilton	4,147	7,040	9,677	7,595	7,179	8,506	7,618	8,691
Lafayette	2,678	3,715	12,113	8,988	8,709	8,908	7,665	8,348
Levy	10,978	15,519	16,665	16,245	11,890	14,357	13,777	15,896
Madison	8,927	7,510	7,806	6,473	8,999	11,892	7,929	8,167
Marion	11,566	14,947	9,684	15,935	14,710	13,730	13,565	14,329
Nassau	14,136	16,383	16,647	16,837	13,810	19,431	21,991	20,748
Putnam	6,759	12,290	14,317	12,697	13,452	11,885	10,118	12,111
St. Johns	9,063	11,995	6,905	11,770	9,166	9,980	11,349	11,807
Suwannee	7,445	10,409	14,607	16,646	13,674	11,569	9,844	12,785
Taylor	18,707	14,429	18,257	28,623	28,653	30,513	34,529	32,631
Union	5,668	5,060	6,322	8,946	9,110	7,396	10,018	7,573
Volusia	4,490	5,087	7,530	8,605	7,989	7,324	9,929	8,667
Total	183,402	236,785	227,736	256,229	245,316	248,581	250,392	285,283
				HARDWOOD				
Alachua	590	1,286	507	207	260	206	1,517	361
Baker	20	18	60	17	60	2	6	9
Bradford	193	241	96	123	99	506	584	158
Clay	270	708	69	598	765	1,111	704	594
Columbia	769	312	96	727	775	294	231	173
Dixie	2,539	4,897	6,430	5,154	3,241	3,099	1,771	2,331
Duval	368	77	151	534	294	658	592	477
Flagler	611	850	120	2	33	15	150	163
Gilchrist	196	398	2,114	174	54	103	117	228
Hamilton	355	444	247	1,099	448	592	407	200
Lafayette	386	317	578	68	169	76	59	68
Levy	5,390	5,591	5,435	4,071	2,750	2,480	1,928	2,074
Madison	1,557	2,329	949	2,408	2,057	1,070	1,743	1,727
Marion	1,300	1,430	789	862	693	680	1,140	724
Nassau	611	861	686	434	1,332	1,978	1,859	740
Putnam	1,486	1,579	2,588	959	796	2,105	1,850	545
St. Johns	1,491	1,178	204	632	546	1,897	1,800	587
Suwannee	732	533	448	271	310	143	224	77
Taylor	1,389	1,861	1,285	4,003	3,399	2,773	407	1,722
Union	126	159	52	10	66	14	115	126
Volusia	259	397	90	324	352	314	258	404
Total	20,638	25,466	22,994	22,677	18,499	20,116	17,462	13,488

Continued

Table 8--Output of industrial products, by county and species group, Northeast Florida, 1977-87--Continued

County	1977	1979	1981	1983	1984	1985	1986	1987
				Thousand cubic feet				
				ALL SPECIES				
Alachua	10,574	15,330	9,256	8,931	11,349	10,544	14,079	14,894
Baker	14,258	19,170	14,498	15,214	17,551	13,777	12,410	15,797
Bradford	9,911	17,022	8,175	11,242	9,283	7,665	9,238	13,457
Clay	6,495	9,332	9,928	10,091	11,284	10,888	12,078	15,428
Columbia	13,837	18,830	14,222	20,614	18,259	16,946	13,438	19,897
Dixie	12,544	15,244	15,123	11,036	13,178	9,001	9,448	13,605
Duval	6,589	5,508	10,866	14,108	8,457	11,973	9,331	12,989
Flagler	4,137	12,352	5,226	6,835	8,316	10,492	10,611	12,879
Gilchrist	6,049	8,400	9,555	6,334	5,879	7,798	7,099	9,078
Hamilton	4,502	7,484	9,924	8,694	7,627	9,098	8,025	8,891
Lafayette	3,064	4,032	12,691	9,056	8,878	8,984	7,724	8,416
Levy	16,368	21,110	22,100	20,316	14,640	16,837	15,705	17,970
Madison	10,484	9,839	8,755	8,881	11,056	12,962	9,672	9,894
Marion	12,866	16,377	10,473	16,797	15,403	14,410	14,705	15,053
Nassau	14,747	17,244	17,333	17,271	15,142	21,409	23,850	21,488
Putnam	8,245	13,869	16,905	13,656	14,248	13,990	11,968	12,656
St. Johns	10,554	13,173	7,109	12,402	9,712	11,877	13,149	12,394
Suwannee	8,177	10,942	15,055	16,917	13,984	11,712	10,068	12,862
Taylor	20,096	16,290	19,542	32,626	32,052	33,286	34,936	34,353
Union	5,794	5,219	6,374	8,956	9,176	7,410	10,133	7,699
Volusia	4,749	5,484	7,620	8,929	8,341	7,638	10,187	9,071
Total	204,040	262,251	250,730	278,906	263,815	268,697	267,854	298,771

Table 9--Output of industrial products, by county and species group, Northwest Florida, 1977-87

County	1977	1979	1981	1983	1984	1985	1986	1987
				Thousand cubic feet				
				SOFTWOOD				
Bay	6,581	12,578	16,155	15,029	8,450	10,849	8,908	10,570
Calhoun	6,526	11,067	9,806	14,056	14,148	14,396	17,311	17,326
Escambia	4,967	5,195	4,606	7,030	5,559	3,701	6,190	6,196
Franklin	5,280	6,912	7,293	7,189	7,575	3,518	2,423	1,703
Gadsden	4,035	6,748	9,416	8,931	8,343	8,917	9,856	8,481
Gulf	1,936	5,642	4,980	4,819	11,039	4,586	5,935	4,277
Holmes	4,748	7,471	4,292	4,519	6,680	4,222	7,270	7,655
Jackson	11,630	10,650	8,090	9,014	14,964	13,308	11,703	15,644
Jefferson	5,250	6,035	7,647	13,108	8,552	8,336	7,442	5,325
Leon	3,387	4,726	5,903	6,480	5,631	5,267	5,126	5,738
Liberty	6,880	6,088	7,356	14,456	13,367	5,787	10,599	11,569
Okaloosa	3,758	5,547	9,215	8,243	7,612	6,085	6,273	7,413
Santa Rosa	5,794	9,000	10,509	11,578	10,245	7,314	7,659	11,061
Wakulla	3,708	7,380	11,098	4,968	8,930	7,965	10,141	9,115
Walton	9,829	7,291	8,574	9,722	8,313	8,457	11,494	9,657
Washington	7,006	6,807	4,352	8,964	7,177	10,196	15,511	9,940
Total	91,315	119,137	129,292	148,106	146,585	122,904	143,841	141,670
				HARDWOOD				
Bay	21	22	452	506	152	82	20	105
Calhoun	431	1,223	808	1,109	1,217	1,855	1,672	492
Escambia	56	97	197	288	234	185	626	1,228
Franklin	26	5	0	0	0	0	10	66
Gadsden	1,347	2,321	241	1,525	1,833	1,251	1,473	1,967
Gulf	12	59	338	240	80	9	112	120
Holmes	611	867	1,741	1,253	991	996	810	954
Jackson	1,486	2,310	1,977	3,002	3,074	2,145	2,301	2,505
Jefferson	926	1,761	593	251	300	496	349	629
Leon	530	1,168	496	227	201	588	236	283
Liberty	767	2,270	1,257	1,703	1,386	317	314	92
Okaloosa	134	92	174	560	178	12	520	707
Santa Rosa	29	113	95	46	96	145	85	648
Wakulla	348	863	521	53	58	61	50	66
Walton	2,357	1,717	1,899	775	619	1,073	728	1,246
Washington	1,771	632	2,003	1,006	1,074	970	587	603
Total	10,852	15,520	12,792	12,544	11,493	10,185	9,893	11,711

Continued

Table 9--Output of industrial products, by county and species group, Northwest Florida, 1977-87--Continued

County	1977	1979	1981	1983	1984	1985	1986	1987
				Thousand cubic feet				
				ALL SPECIES				
Bay	6,602	12,600	16,607	15,535	8,602	10,931	8,928	10,675
Calhoun	6,957	12,290	10,614	15,165	15,365	16,251	18,983	17,818
Escambia	5,023	5,292	4,803	7,318	5,793	3,886	6,816	7,424
Franklin	5,306	6,917	7,293	7,189	7,575	3,518	2,433	1,769
Gadsden	5,382	9,069	9,657	10,456	10,176	10,168	11,329	10,448
Gulf	1,948	5,701	5,318	5,059	11,119	4,595	6,047	4,397
Holmes	5,359	8,338	6,033	5,772	7,671	5,218	8,080	8,609
Jackson	13,116	12,960	10,067	12,016	18,038	15,453	14,004	18,149
Jefferson	6,176	7,796	8,240	13,359	8,852	8,832	7,791	5,954
Leon	3,917	5,894	6,399	6,707	5,832	5,855	5,362	6,021
Liberty	7,647	8,358	8,613	16,159	14,753	6,104	10,913	11,661
Okaloosa	3,892	5,639	9,389	8,803	7,790	6,097	6,793	8,120
Santa Rosa	5,823	9,113	10,604	11,624	10,341	7,459	7,744	11,709
Wakulla	4,056	8,243	11,619	5,021	8,988	8,026	10,191	9,181
Walton	12,186	9,008	10,473	10,497	8,932	9,530	12,222	10,903
Washington	8,777	7,439	6,355	9,970	8,251	11,166	16,098	10,543
Total	102,167	134,657	142,084	160,650	158,078	133,089	153,734	153,381

Table 10--Output of industrial products, by county and species group, Central-South Florida, 1977-87

County[a]	1977	1979	1981	1983	1984	1985	1986	1987
				Thousand cubic feet				
				SOFTWOOD				
Brevard	64	414	35	157	1,136	3,608	1,040	6,035
Broward	7	--	--	--	--	--	--	--
Charlotte	91	235	1,181	734	732	39	68	1,392
Citrus	122	262	1,406	403	485	33	411	375
Collier	444	301	56	101	93	73	73	73
De Sota	1	437	436	274	264	258	66	579
Glades	421	19	46	214	104	104	561	987
Hardee	653	576	69	49	66	2	--	--
Hendry	1,116	693	785	448	438	--	3,036	3,361
Hernando	1,090	1,155	834	852	766	747	736	688
Highlands	207	178	191	434	427	145	146	313
Hillsborough	572	1,007	1,099	453	236	299	531	493
Indian River	2,087	--	--	--	--	--	185	185
Lake	757	537	624	1,120	1,588	1,739	903	1,450
Lee	435	229	5	--	--	10	341	--
Manatee	476	52	16	222	253	37	1,091	85
Martin	2	--	9	--	--	--	--	--
Okeechobee	349	55	427	253	265	--	201	397
Orange	971	929	147	766	970	529	544	772
Osceola	1,981	749	1,616	3,007	2,408	2,464	3,009	2,550
Palm Beach	--	--	67	67	67	67	66	172
Pasco	689	2,527	1,554	2,675	3,306	2,169	2,216	1,189
Pinellas	12	131	129	24	16	128	91	86
Polk	1,556	2,062	7,024	6,220	2,870	2,854	2,974	2,309
St. Lucie	46	12	25	--	102	--	192	240
Sarasota	284	723	--	--	--	1	--	3
Seminole	311	475	571	116	127	1,325	140	205
Sumter	1,019	2,111	2,748	1,251	1,498	975	2,263	2,651
Total	15,763	15,869	21,100	19,840	18,217	17,606	20,884	26,590
				HARDWOOD				
Brevard	--	--	5	--	41	17	--	20
Broward	--	--	--	--	--	--	--	1
Charlotte	--	--	--	--	--	--	--	--
Citrus	9	--	--	--	--	--	106	141
Collier	--	--	--	--	--	--	--	--
De Sota	--	--	--	--	--	--	--	--
Glades	1	--	--	--	--	--	--	--
Hardee	83	105	--	85	52	41	7	--
Hendry	--	--	--	--	--	--	--	--
Hernando	624	490	677	583	384	317	164	122
Highlands	24	--	--	85	52	41	7	--
Hillsborough	--	--	16	20	--	--	2	77
Indian River	--	--	--	--	--	--	--	--
Lake	138	--	50	--	182	411	439	372
Lee	--	--	--	--	--	--	--	114
Manatee	--	--	--	--	--	--	7	7
Martin	--	--	--	--	--	--	--	--

Continued

Table 10--Output of industrial products, by county and species group, Central-South Florida, 1977-87--Continued

County[a]	1977	1979	1981	1983	1984	1985	1986	1987
				Thousand cubic feet				
				HARDWOOD				
Okeechobee	9	1	--	--	--	--	--	--
Orange	--	--	6	9	--	--	5	5
Osceola	138	18	215	323	--	--	1	34
Palm Beach	--	--	--	--	--	--	--	--
Pasco	538	297	1,006	275	88	44	7	72
Pinellas	--	--	14	2	--	--	--	3
Polk	2	196	621	816	98	144	112	50
St. Lucie	--	1	--	--	--	--	--	--
Sarasota	--	--	--	--	--	--	--	--
Seminole	--	--	10	--	178	257	257	--
Sumter	22	--	108	--	669	405	260	198
	1,588	1,108	2,728	2,198	1,744	1,677	1,374	1,216
				ALL SPECIES				
Brevard	64	414	40	157	1,177	3,625	1,040	6,055
Broward	7	--	--	--	--	--	--	1
Charlotte	91	235	1,181	734	732	39	68	1,392
Citrus	131	262	1,406	403	485	33	517	516
Collier	444	301	56	101	93	73	73	73
De Sota	.1	437	436	274	264	258	66	579
Glades	422	19	46	214	104	104	561	987
Hardee	736	681	69	134	118	43	7	--
Hendry	1,116	693	785	448	438	--	3,036	3,361
Hernando	1,714	1,645	1,511	1,435	1,150	1,064	900	810
Highlands	231	178	191	519	479	186	153	313
Hillsborough	572	1,007	1,115	473	236	299	533	570
Indian River	2,087	--	--	--	--	--	185	185
Lake	895	537	674	1,120	1,770	2,150	1,342	1,822
Lee	435	229	5	--	--	10	341	114
Manatee	476	52	16	222	253	37	1,098	92
Martin	2	--	9	--	--	--	--	--
Okeechobee	358	56	427	253	265	--	201	397
Orange	971	929	153	775	970	529	549	777
Osceola	2,119	767	1,831	3,330	2,408	2,464	3,010	2,584
Palm Beach	--	--	67	67	67	67	66	172
Pasco	1,227	2,824	2,560	2,950	3,394	2,213	2,223	1,261
Pinellas	12	131	143	26	16	128	91	89
Polk	1,558	2,258	7,645	7,036	2,968	2,998	3,086	2,359
St. Lucie	46	13	25	--	102	--	192	240
Sarasota	284	723	--	--	--	1	--	3
Seminole	311	475	581	116	305	1,582	397	205
Sumter	1,041	2,111	2,856	1,251	2,167	1,380	2,523	2,849
Total	17,351	16,977	23,828	22,038	19,961	19,283	22,258	27,806

-- = negligible.

[a]Counties with no output were omitted.

The Forest Service, U.S. Department of Agriculture, is dedicated to the principle of multiple use management of the Nation's forest resources for sustained yields of wood, water, forage, wildlife, and recreation. Through forestry research, cooperation with the States and private forest owners, and management of the National Forests and National Grasslands, it strives—as directed by Congress—to provide increasingly greater service to a growing Nation.

Davenport, Edgar L.; Tansey, John B. 1990. Changes in Florida's industrial roundwood products output, 1977-1987. Resour. Bull. SE-116. Asheville, NC: U.S. Department of Agriculture, Forest Service, Southeastern Forest Experiment Station. 21 pp.

Nearly 480 million cubic feet of industrial roundwood products were harvested from Florida's forests during 1987, 48 percent more than in 1977. Pulpwood and saw logs were the leading products. Pulpwood accounted for 60 percent and saw logs 30 percent of the total roundwood products. Output of byproducts increased from 99 million cubic feet in 1977 to 170 million cubic feet in 1987. Only 285,000 cubic feet of residues, less than 1 percent, were not used. A total of 143 primary wood-using plants operated in the State during 1987. Mill receipts of more than 537 million cubic feet exceeded drain from the State's forests by 12 percent in 1987. The State was a net importer of industrial roundwood.

KEYWORDS: Saw logs, pulpwood, veneer logs, mill residues.

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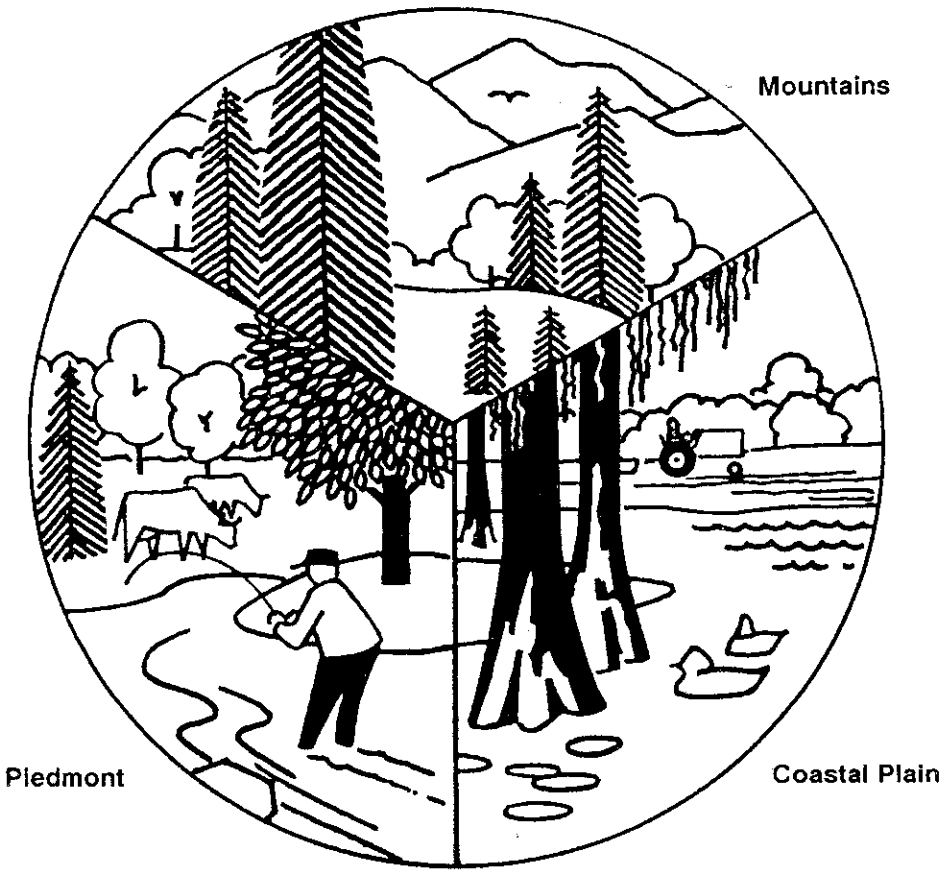

Southeastern Forest Experiment Station

Established 1921

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

RESEARCH MISSION:

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

RESEARCH LOCATIONS:

Blacksburg, VA
Research Triangle Park, NC
Franklin, NC
Clemson, SC
Charleston, SC
Athens, GA
Macon, GA
Olustee/Gainesville, FL

EXPERIMENTAL FORESTS:

Chipola, Marianna, FL
Holt Walton, Vienna, GA
Cowetta, Otto, NC
Bent Creek, Asheville, NC
Santee, Moncks Corner, SC
Scull Shoals, Athens, GA
Hitchiti, Juliette, GA
Olustee, Olustee, FL