

THE TIMBER INDUSTRIES of NEW JERSEY and DELAWARE

by James T. Bones

U.S.D.A. FOREST SERVICE RESOURCE BULLETIN NE-28
1973

NORTHEASTERN FOREST EXPERIMENT STATION, UPPER DARBY, PA.
FOREST SERVICE, U.S. DEPARTMENT OF AGRICULTURE
WARREN T. DOOLITTLE, DIRECTOR

The Author

JAMES T. BONES, research forester, received his bachelor's degree in soil conservation from Utah State University in 1952 and his master's degree in forest management from the same university in 1956. He worked in Forest Survey at the Pacific Northwest Forest Experiment Station and the Institute of Northern Forestry before transferring to the Northeastern Forest Experiment Station in March 1968. He is now stationed in Upper Darby, Pa., where he is working in the timber-removals phase of Forest Survey.

MANUSCRIPT RECEIVED FOR PUBLICATION 12 JULY 1972.

THE TIMBER INDUSTRIES of NEW JERSEY and DELAWARE

Abstract

Results of a field canvass of all known primary wood manufacturers that operated in Delaware and New Jersey in 1970. The industrial wood statistics are compared with previous surveys and important trends in industry development are noted. Total roundwood output was down 31 percent in Delaware since 1956, and down 43 percent in New Jersey since 1955.

Contents

HIGHLIGHTS	1
BACKGROUND	2
WOOD-USING INDUSTRIES DEVELOP	2
Past trends	2
More recent trends	3
Today roundwood output is declining	3
Prospects for the future	4
SOURCE OF INDUSTRIAL WOOD	5
MAJOR TIMBER PRODUCTS	5
Lumber and sawlog production at historic lows	5
Pulpwood production declining	6
Current veneer log production level static—future in doubt	7
MINOR TIMBER PRODUCTS	8
Cedar products in good demand	8
Copper smelters use local wood	8
Delaware a major producer of piling	8
MANUFACTURING PLANT RESIDUES	9
TABLES	9

HIGHLIGHTS

The 1970 timber-industry surveys showed that

in DELAWARE since the 1956 survey:

- ✱ Total roundwood output was down 31 percent to 8.7 million cubic feet.
- ✱ Sawlog production was down 77 percent to 13.1 million board feet.
- ✱ Pulpwood production was up 177 percent to 62 thousand cords.
- ✱ Veneer-log production was up 23 percent to 5.3 million board feet.
- ✱ Piling production was down 39 percent to 1.2 million linear feet.
- ✱ Combined production for other products such as poles, post, and cooperage logs was down 65 percent to 186 thousand cubic feet.

in NEW JERSEY since the 1955 survey:

- ✱ Total roundwood output was down 43 percent to 7.3 million cubic feet.
- ✱ Sawlog production was down 33 percent to 13.8 million board feet.
- ✱ Pulpwood production was down 45 percent to 46.5 thousand cords.
- ✱ Veneer-log production was up 13 percent to 1.4 million board feet.
- ✱ Combined production for other products such as furnace poles, cedar fencing, pilings, and posts was down 52 percent to 1.3 million cubic feet.

BACKGROUND

THE FOREST SERVICE of the U. S. Department of Agriculture conducts continuing forest surveys of all states to provide up-to-date information about the timber resources of the Nation. In the region served by the Northeastern Forest Experiment Station, all states have been surveyed at least once; and many have been resurveyed. As part of the 1971 resurveys of Delaware and New Jersey, statistics for timber removals were gathered.

This report is the result of a field canvass of all primary wood manufacturers that were op-

erating in those states in 1970. Pulpwood production data were gathered as part of the Station's annual survey of pulpwood producers of the Northeast.

During the canvass, the Delaware Department of Natural Resources and Environmental Control, the Delaware Department of Agriculture, and the New Jersey Department of Environmental Protection provided a list of all known firms within their respective states. The New Jersey Department also assisted by contacting several firms for which additional information was required.

WOOD-USING INDUSTRIES DEVELOP

Past Trends

There was a period during the settlement and development of New Jersey and Delaware (1650-1800) when the sawmill—an integral part of every community—depended upon the surrounding forests for sawlogs. The townspeople of these small communities also depended upon these forests for fuelwood, fence posts, and material from which to fashion farm implements. As the Wilmington area of Delaware and the New York and Philadelphia metropolitan areas that bordered New Jersey grew, their residents required increasing quantities of local wood.

Between 1750 and 1850 many of the forests of northern Delaware and New Jersey were clearcut at 25- and 40-year intervals to supply fuel for the cities. Observers estimated that around 1850 about 6,500 acres¹ were cut over annually in northern New Jersey alone just to supply fuel for the northern iron furnaces. Most city dwellers used wood or wood charcoal for fuel. Forges and glass and pottery factories also burned local wood. The railroads that connected New York and Philadelphia to

Wilmington and other cities depended upon large quantities of firewood, most of which was cut adjacent to the railroad rights-of-way. Shortly after 1850, anthracite from the Wilkes-Barre and Scranton areas of Pennsylvania began to replace wood for fuel in Wilmington, Philadelphia, and New York City.

Coastal white-cedar swamps were a prime source of shingle wood for most of the houses in Philadelphia and Wilmington. After these swamps were depleted of the larger trees, cutters proceeded to mine buried logs for hand-split products. By 1900 many of the small-diameter white-cedar regrowth trees were being cut for small sawlogs and such roundwood products as bean poles, fence posts, and shade-tree stakes.

Over the years, Wilmington, Philadelphia, and New York City had developed into centers of waterborne commerce and had attracted many secondary industries that used lumber and other wood products in fabricating a variety of items for local use and for export. These secondary industries, for the most part, used wood that was transported from inland forests down the Hudson, Delaware, and Susquehanna Rivers, or that was imported from abroad. In product value and employment, these secondary industries dominated the

¹Vermeule, C. C. (Report on forests.) Annual report of the State Geologist, 1899. N. J. Geol. Surv. Trenton, 1900.

wood-products economy of New Jersey and Delaware by 1900.

Describing conditions in the wood-using industries of New Jersey in 1911, Alfred Gaskill, New Jersey State Forester, wrote:²

... the forests of New Jersey produce only about 11 percent as much crude lumber as is demanded by her manufacturers, and only five and one-half percent of that actually used by them. Though these figures represent considerably less than the actual yield of the forests within our borders, because there is no means of knowing the State's output of railroad ties, electric poles, posts, piles, and other wood materials, it remains an undoubted and important fact that the product of our woodland is now barely a tenth of what it might be.

He also wrote that the major reason why New Jersey manufacturers did not use more wood from New Jersey was the difficulty in bringing producer and consumer together. Many consumers demanded a particular species or form of wood. Many wood producers offered their commodity only in small amounts.

More Recent Trends

The level of forest industry development and its geographic distribution within Delaware and New Jersey is still controlled by the availability of timber and the growth of major market areas rather than by county or state boundaries. Most sawmills and other primary manufacturers tend to locate adjacent to their timber source while secondary industries tend to locate close to their ultimate markets. A special category of secondary industry—important to New Jersey's economy—depends upon reclaimed wastes as a raw material. These industries are located near urban population centers which, provide both raw materials and markets. Most secondary industries in Delaware and New Jersey are now completely independent of their State's timber resource.

Pulp production and consumption statistics (in thousands of tons) for New Jersey and Delaware in 1945 illustrate these relationships:

Delaware New Jersey

Production, woodpulp	0	52.3
Consumption, woodpulp	13.0	216.4
Consumption, other materials	35.3	828.1
Consumption, total	48.3	1,044.5

No woodpulp was produced in Delaware in 1945, thus the State's entire pulpwood harvest was shipped to other states for manufacture. Most of New Jersey's pulpwood harvest was used in the manufacture of woodpulp for building, roofing, and insulating products within the State; however, 79 percent of the State's pulp consumption came from fiber other than pulpwood. The main source of these other materials was reclaimed waste paper, which accounted for 88 percent of the total. Most of the waste paper was collected in the metropolitan areas in which the paper products were marketed.

Today-Roundwood Output is Declining

The timber industries, as they exist today, have changed substantially in numbers and requirements in both states. The number of primary wood-using plants in Delaware and New Jersey operating in the last 15 years has declined from nearly 200 to 92, with a corresponding decrease in the industrial wood requirement. Roundwood production in Delaware and New Jersey has also declined.

Almost 7.3 million cubic feet of industrial roundwood was produced from New Jersey timberlands in 1970 (table 4). This was a 43 percent decrease since 1955. Softwood output decreased 53 percent to 4.0 million cubic feet, while hardwood output decreased 23 percent to 3.3 million cubic feet. Veneer logs and pilings were the only products that increased in volume between 1955 and 1970; however, these increases may only be temporary. New Jersey's largest veneer producer ceased operations in 1971.

Delaware's output of industrial roundwood stood at 8.7 million cubic feet in 1970, a 31-percent decline from the 12.6 million cubic feet output in 1956 (table 3). Roundwood output from both softwoods and hardwoods dropped 31 percent. Softwoods made up 76 percent of the 1970 roundwood output. Softwood pulpwood bolts and veneer logs were

²Pierson, Albert G. Wood Using Industries in New Jersey. N. J. Forest Park Reserv. Comm. 63 p., illus., 1914.

the only products whose output increased during the period. These gains were offset by an 86-percent decrease in the softwood sawlog cut.

Prospects for the Future

As populations in Delaware and New Jersey metropolitan areas continue to grow, more wood-using industries will be established to satisfy the increased demand for wood products. The wood required for these industries—mostly secondary manufacturers—will come from out-of-state shipments or from reclaimed waste wood or wood fibers.

Most of New Jersey's woodpulp consumption has come from reclaimed waste paper for many years. Cedar is currently imported from Canada and the South to supplement local supplies. Some northern New Jersey hardwood sawmills and copper refiners depend to a great extent upon wood that is recovered from suburban land-clearing projects. One New Jersey sawmill operates solely on salvaged pilings and other wood debris recovered from the New York City harbor area. In total, these trends indicate that industrial roundwood is becoming more difficult to obtain from New Jersey timberlands.

Those wood-using industries that are able to utilize the small-diameter trees that predominate in New Jersey forests will continue to prosper. Those that require large-diameter trees or certain tree species might find their

raw-material supplies dwindling and be forced to import wood or move their plants nearer to adequate timber supplies.

People are becoming increasingly aware of the value of their remaining woodlands. Legislative actions are being suggested as a means of maintaining New Jersey's woodlands. Tax reform, subsidies, and regulation are all being considered. In the long run, however, the future of the State's woodlands will rest in the hands of the private woodland owner, and will depend upon his attitude toward managing and maintaining the forest resource.

Delaware's loblolly pine stands have been a major source of sawlogs, poles, pilings, and pulpwood over the years. Recently the cutting rate in pine stands has quickened in response to the added demand for softwood veneer logs—a new industry in the area.

An infestation of southern pine bark beetles has built to epidemic proportions in southern Delaware after destroying an estimated 55 million board feet of pine on the Delmarva Peninsula in 1970.³ Salvage programs—now under way—could create an overabundance of industrial roundwood in the next few years if the infestation spreads. This forced harvest, however, might ultimately lead to a wood shortage that will hurt local industry in the long run.

³Hanson, J. B., P. J. Barry, and B. H. Baker. Southern pine beetle evaluation on the Delmarva Peninsula—1971. USDA Forest Serv. S&PF project rep. 7 p. Upper Darby, Pa., 1971.

SOURCE OF INDUSTRIAL WOOD

Most of the New Jersey industrial wood output in 1970 came from a block of four southern counties—Atlantic, Burlington, Camden, and Gloucester (table 6). The 4.6 million cubic-foot harvest from these counties represented 63 percent of New Jersey's total. Sussex County in Delaware accounted for 93 percent of this State's production total (table 5).

In a recent regional economic study, Herrick⁴ classified counties of the Northeastern States into homogeneous subareas based upon factors sensitive to timber resource-based activities. Five of the eight subareas he identified are represented in New Jersey and Delaware. These subareas, along with the volume of industrial wood produced within them in 1970, are listed below:

Although a major portion of the industrial wood production from each state came from counties located in the small-scale industrial wood-using subareas, an equal volume of the industrial wood produced in New Jersey was cut in the combined suburban fringe and urban-suburban subareas. Evidently not all the timber cut during land-clearing for urban development is destroyed or otherwise lost. Significant volumes are being diverted into industrial wood-using procurement channels. Only token quantities of industrial wood are being cut in subareas that are predominantly agricultural or that contain extensive acreages of commercial hardwood forests.

Subarea	New Jersey		Delaware	
	Million cu. ft.	Percent	Million cu. ft.	Percent
Small-scale industrial wood-using areas	3.4	46	8.1	93
Suburban fringe	2.3	32	—	—
Urban-suburban	1.1	15	(*)	(*)
Extensive commercial forest land	.4	5	—	—
Predominantly agricultural	.1	2	.6	7
All subareas	7.3	100	8.7	100

*Less than 50 thousand cubic feet or 0.5 percent.

MAJOR TIMBER PRODUCTS

Lumber and Sawlog Production at Historic Lows

New Jersey and Delaware have never been nationally prominent lumber producers, but lumber has always been the major product of their primary wood manufacturers. Production peaks were reached around 1880 in New Jersey and 1910 in Delaware (fig. 1). Production levels have trended downward since then.

The species distribution of lumber produced for several selected years shows (*in million*

board feet) that pitch pine in New Jersey and loblolly pine in Delaware have been the main species manufactured into lumber in the last 100 years:

	1869	1912	1945	1970
Delaware:				
Yellow pine	16	22	19	6
Oaks	2	4	2	4
Other species	1	2	1	3
Total	19	28	22	13
New Jersey:				
Yellow pine	45	12	6	1
Oaks	20	8	13	7
Cedar	15	2	1	1
Other species	22	13	11	5
Total	102	35	31	14

⁴Herrick, Owen W. Delimiting regional subareas for studies of timber-resource-based activity in the Northeast. Submitted to *Forest Science*, June 21, 1972.

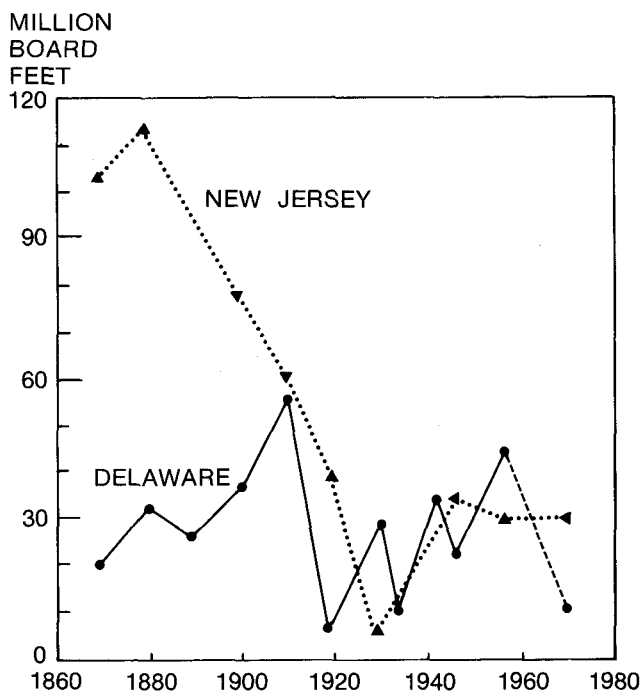


Figure 1.—Lumber production in Delaware and New Jersey by selected years, 1864-1970. Dashed portion of line represents estimated statistics.

Oak lumber has become more important recently because pine sawlogs are relatively scarce. Competition for pine is extremely acute in Sussex County, Delaware, where demand for pine veneer logs and pulpwood is increasing in addition to the traditional demand for piling and sawlogs.

In New Jersey, sawlog production nearly equaled mill receipts in 1970 (table 7). The 1.5 million board-foot deficit was made up by sawlog imports, mostly from New York and Pennsylvania. Few New Jersey sawlogs were shipped to other states for manufacture.

All the 12.3 million board feet of sawlogs received by Delaware sawmills during 1970 came from within the State. In addition, 767 thousand board feet of Delaware sawlogs were shipped to other states for manufacture.

Seventy-five sawmills were operating in Delaware and New Jersey in 1970 (table 8). Fifteen of the 18 Delaware mills and 45 of the 57 New Jersey mills were considered commercial establishments. Most commercial operators were uncertain about the future of the sawmill

industry. They pointed to a shrinking labor force, increasing operating costs, greater government restrictions, and growing competition for stumpage as causes of their present difficulties.

Pulpwood Production Declining

Over 62 thousand cords of roundwood pulpwood were cut from Delaware timberlands in 1970. In addition, 1.5 thousand cord-equivalents of pulpwood were recovered as chips from sawmill residues within the State. Since Delaware has no woodpulp mills, the entire production was shipped to neighboring states for manufacture.

Although papermaking was one of the early industries of Delaware (Gilpin established a mill at Augustine in 1787), rags were the major source of fiber. The State's only woodpulp mill was established on the Christina River at Mill Creek in 1881 and operated until 1933.

Pulpwood production in Delaware hit a record high of 98 thousand cords in 1967 (fig. 2). Since then production has declined each year. However, Sussex County has continued to produce more than 50 thousand cords of round pulpwood per year since 1967. This

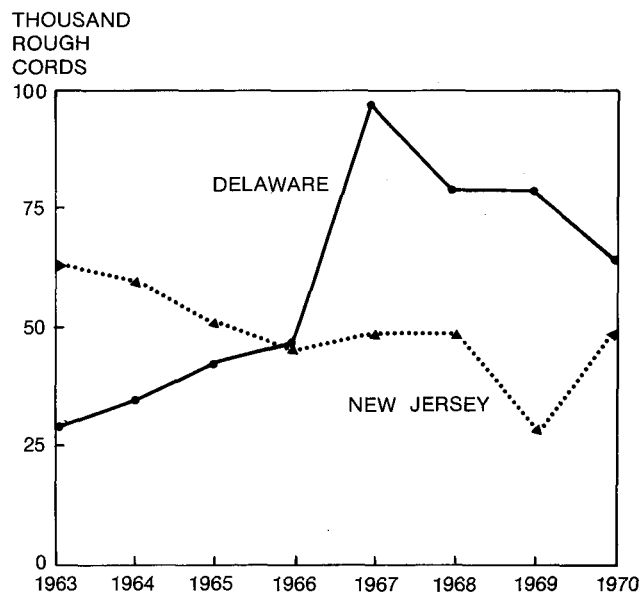


Figure 2.—Pulpwood production in Delaware and New Jersey, 1963-1970.

county was the twelfth highest producer of roundwood for woodpulp in the Northeast in 1970.

In New Jersey most of the 47 thousand cords of pulpwood cut in 1970 went to one of three pulpmills operating in the State. These mills produce pulp used in roofing and insulation board. Woodpulp production represents only a small fraction of the total pulp production each year. Most of the pulp is produced from recycled waste such as newspapers.

In recent years pulpwood production in New Jersey has trended downward to a low of 30 thousand cords in 1969. Although production recovered the next year, the 1970 production level represents a 26-percent decrease since 1963. Most of the cut comes from pine stands in Burlington, Camden, and Gloucester Counties.

Current Veneer Log Production Level Static—Future in Doubt

Veneer-log production statistics for New Jersey—collected during past industry surveys—indicate that total production (in million board feet) has not fluctuated greatly in the past 8 years:

	1963	1968	1970
Delaware:			
Softwood	0.7	6.2	3.0
Hardwood	5.1	3.3	2.3
Total	5.8	9.5	5.3
New Jersey:			
Softwood	—	—	—
Hardwood	1.3	1.5	1.4
Total	1.3	1.5	1.4

A rapidly growing yellow pine plywood industry has stimulated increased demand for soft-

wood veneer logs in Delaware, while hardwood veneer-log production in Delaware has declined.

Nearly two-thirds of the Delaware production was used for softwood plywood in 1968, and the other one-third was used for basket veneer. Three-fourths of the New Jersey production was used for basket veneer, and the other one-fourth was used for commercial and face veneer.

Because no veneer plants were operating in Delaware in 1970, the State's veneer-log cut was shipped to other states for manufacture. New Jersey had five veneer plants operating in 1970, two less than in 1968. Nearly 92 percent of the 1.4 million board feet of veneer logs cut in New Jersey was sold to local veneer plants (table 9). In addition, New Jersey veneer plants purchased 7.5 million board feet of veneer logs from neighboring states.

The future demand for hardwood veneer logs in both New Jersey and Delaware depends upon the well-being of the New Jersey basket industry. Manufacturers have been plagued with rising wood costs and a shrinking demand for baskets. In 1970 one major basket producer switched from wooden basket bottoms to plastic ones to combat the rising cost of pine lumber used for basket bottoms. Automation within local agricultural industry and increased use of containers made from materials other than wood veneer have lowered the demand for baskets.

Heavy cutting in Delaware pine stands during the past 5 years has created a temporary shortage of veneer-log size material. Until additional stands—which are presently immature—develop, softwood veneer logs will continue to be relatively scarce, and production will continue to decline.

MINOR TIMBER PRODUCTS

Cedar Products in Good Demand

Atlantic white-cedar, which grows in the fresh-water swamps of southern New Jersey, has had a wide variety of uses over the years. In 1911, 1.6 million board feet of cedar was consumed at local wood-using plants. The 669 thousand board feet cut in New Jersey in 1911 was distributed to plants that produced the following products.

Planing mill products and general millwork	439
Ship and boatbuilding	154
Boxes and crates	76
Total	669

In addition, over 20 million shingles and an indeterminate amount of plasterers' laths were produced.

In 1970 over 1.0 million board feet of white-cedar sawlogs and a half million cubic feet of white-cedar bolts, posts, and poles were cut from New Jersey timberlands. Boatbuilding is still a major use for the local cedar. In addition, a growing demand for cedar fencing is developing in many suburban communities. Several large fencing manufacturers in New Jersey are importing cedar from as far away as Canada and North Carolina to supplement local supplies. These imports—86 thousand cubic feet—represented slightly more than 10 percent of the 1970 consumption total.

Copper Smelters Use Local Wood

Most copper smelters in the New York metropolitan area use wood as a reductant in their refining process. As oxygen from the ore combines with the carbon in the wood, the metallic portion of the ore can be recovered. Copper refiners prefer hardwood furnace poles, which average 10 inches in diameter and 30 feet in

length. Many of these poles are being salvaged from land-clearing projects in northern New Jersey.

During 1970 nearly 17 thousand furnace poles cut in New Jersey were delivered to local copper smelters. This represented 374 thousand cubic feet of wood that was consumed in the refining process.

Delaware a Major Producer of Piling

Most people think of piers, wharves, and other waterfront structures when pilings are mentioned, but pilings are also used for supporting foundations of heavy structures and bridges. Equally important is the necessity of replacing damaged and rotten pilings that are already in use.

Pilings are in continuing demand along the seashores of the Northeast, and much of this demand is satisfied from Delaware timberlands. Few logging operators in Delaware specialize in cutting pilings only, because the trees suitable for pilings are scattered throughout the timber stands. Most operators sort out the pilings, at the roadside or at a concentration point, because pilings are more valuable than sawlogs or pulpwood.

Piling production from Delaware timberlands in 1970 was 703 thousand cubic feet. This volume represented a 39-percent decrease from the 1,154 thousand cubic feet produced in 1956, but a 46-percent increase over the 480 thousand cubic feet produced in 1951. Most of the softwood pilings cut in 1970 were loblolly pine and most of the hardwood pilings were oaks.

A report on the pilings handled by northeastern wood-preservation plants attests to the importance of Delaware as a producer of pilings: more than 50 percent of the piling receipts in 1969 were from Delaware.

MANUFACTURING PLANT RESIDUES

New Jersey primary manufacturers recycled nearly 97 percent of their wood residues in 1970. Two-thirds of the 737 thousand cubic feet of coarse residues recovered were used by industry or private individuals for fuel (table 11). The remaining coarse residues were chipped for fiber products or remanufactured into such items as doll houses, dog houses, and wood novelties.

Most of New Jersey's 627 thousand cubic feet of fine residues that were recovered in 1970 were used as either industrial fuel or agricultural bedding and mulches. The sawdust produced by several northern New Jersey

manufacturers were marketed through an agent.

Delaware sawmills recycled more than 91 percent of their wood residues in 1970. Nearly 54 percent of the 715 thousand cubic feet of residues that were used was large enough for chipping (table 10). Several large manufacturers have installed machinery for reducing their coarse residues to fines, however, because of a brisk local demand for chicken litter. The volume of coarse residues converted into chicken litter is equal to 40 percent of the volume chipped for pulpwood. The poultry industry uses all the fine residues that are being recovered.

List of Tables

1. Roundwood production in Delaware by species, 1970.
2. Roundwood production in New Jersey by species, 1970.
3. Change in industrial roundwood production in Delaware between 1956 and 1970.
4. Change in industrial roundwood production in New Jersey between 1955 and 1970.
5. Industrial roundwood harvest in Delaware by counties, species groups, and major products, 1970.
6. Industrial roundwood harvest in New Jersey by counties, species groups, and major products, 1970.
7. Sawlog production and receipts in New Jersey, by counties and species groups, 1970.
8. Number of operating sawmills in Delaware and New Jersey by counties and types of sawmill, 1970.
9. Veneer log production and receipts by species and origin of logs, New Jersey, 1970.
10. Production and disposition of sawmill residues by types of residues and species groups, Delaware, 1970.
11. Production of residues and disposition of byproducts from primary wood-processing plants by industrial sources, types of residues types of use, and species groups, New Jersey, 1970.

Table 1.—Roundwood production in DELAWARE, by species, 1970

Species group	Product			
	Sawlogs	Veneer logs	Pulpwood	Other products ^a
	<i>Thousand board feet^b</i>	<i>Standard cords</i>	<i>Thousand cubic feet</i>	
Softwood:				
Yellow pines	6,326	2,988	59,062	466
Other softwoods	—	—	—	2
Total	6,326	2,988	59,062	468
Hardwood:				
Beech	122	—	352	—
Hickory	100	—	41	32
Maple	339	41	721	—
Red oaks	2,418	69	504	161
White oaks	1,273	—	595	173
Yellow-poplar	902	1,589	622	—
Sweetgum	1,628	422	231	—
Walnut	5	12	—	—
Other hardwood	—	195	115	55
Total	6,787	2,328	3,181	421
All species	13,113	5,316	62,243	889

^aIncludes cooperage logs, piling, poles, and posts.

^bInternational 1/4-inch rule.

Table 2.—Roundwood production in NEW JERSEY, by species, 1970

Species group	Product			
	Sawlogs	Veneer logs	Pulpwood	Other products ^a
	<i>Thousand board feet^b</i>	<i>Standard cords</i>	<i>Thousand cubic feet</i>	
Softwood:				
Yellow pines	950	—	38,376	34
White-cedar	1,087	—	—	553
Other softwoods	72	—	—	—
Total	2,109	—	38,376	587
Hardwood:				
Ash	190	—	182	69
Beech	494	—	1,791	—
Maple	854	6	820	5
Red oaks	4,351	65	4,318	374
White oaks	2,346	—	721	175
Sweetgum	1,889	125	—	45
Yellow-poplar	1,395	1,218	—	—
Other hardwoods	138	34	297	9
Total	11,657	1,448	8,129	677
All species	13,766	1,448	46,505	1,264

^aIncludes piling, poles, posts, mine timbers, and miscellaneous products such as handle stock, fencing bolts, and dimension bolts.

^bInternational 1/4-inch rule.

Table 3.—Change in industrial roundwood production in DELAWARE between 1956 and 1970

Product	All species			Softwoods			Hardwoods		
	1956	1970	Change	1956	1970	Change	1956	1970	Change
	<i>Thousand cubic feet</i>	<i>Thousand cubic feet</i>	<i>Percent</i>	<i>Thousand cubic feet</i>	<i>Thousand cubic feet</i>	<i>Percent</i>	<i>Thousand cubic feet</i>	<i>Thousand cubic feet</i>	<i>Percent</i>
Sawlogs	8,345	1,931	- 77	6,644	952	- 86	1,701	979	- 42
Veneer logs	713	875	+ 23	—	468	—	713	407	- 43
Pulpwood	1,800	4,979	+177	1,800	4,725	+163	—	254	—
Piling	1,154	703	- 39	689	420	- 39	465	283	- 39
Other products	539	186	- 65	430	48	- 89	109	138	+ 27
Total	12,551	8,674	- 31	9,563	6,613	- 31	2,988	2,061	- 31

Table 4.—Change in industrial roundwood production in NEW JERSEY between 1955 and 1970

Product	All species			Softwoods			Hardwoods		
	1955	1970	Change	1955	1970	Change	1955	1970	Change
	<i>Thousand cubic feet</i>	<i>Thousand cubic feet</i>	<i>Percent</i>	<i>Thousand cubic feet</i>	<i>Thousand cubic feet</i>	<i>Percent</i>	<i>Thousand cubic feet</i>	<i>Thousand cubic feet</i>	<i>Percent</i>
Sawlogs	3,107	2,086	- 33	1,374	340	- 75	1,733	1,746	+ 1
Veneer logs	190	215	+ 13	—	—	—	190	215	+ 13
Pulpwood	6,769	3,720	- 45	5,163	3,070	- 41	1,606	650	- 60
Piling	104	267	+157	43	34	- 21	61	233	+282
Other products	2,534	997	- 61	1,837	553	- 70	697	444	- 36
Total	12,704	7,285	- 43	8,417	3,997	- 53	4,287	3,288	- 23

Table 5.—Industrial roundwood harvest in DELAWARE, by counties, species groups, and major products, 1970

[In thousands of cubic feet]

County and species group	Timber products			Total
	Sawlogs	Pulpwood	Other ^a	
Kent:				
Softwood	14	89	—	103
Hardwood	256	—	240	496
Total	270	89	240	599
New Castle:				
Softwood	—	—	—	—
Hardwood	3	—	13	16
Total	3	—	13	16
Sussex:				
Softwood	938	4,636	936	6,510
Hardwood	720	254	575	1,549
Total	1,658	4,890	1,511	8,059
All counties:				
Softwood	952	4,725	936	6,613
Hardwood	979	254	828	2,061
Total	1,931	4,979	1,764	8,674

^aOther products include posts, poles, piling, and veneer and cooperage logs.

Table 6.—Industrial roundwood harvest in NEW JERSEY, by counties, species groups, and major products, 1970

[In thousands of cubic feet]

County and ^a species group	Timber products			Total
	Sawlogs	Pulpwood	Other ^b	
Atlantic:				
Softwood	155	304	460	919
Hardwood	11	14	114	139
Total	166	318	574	1,058
Burlington:				
Softwood	11	1,204	30	1,245
Hardwood	199	304	26	529
Total	210	1,508	56	1,774
Camden:				
Softwood	—	610	28	638
Hardwood	57	112	—	169
Total	57	722	28	807
Cape May:				
Softwood	51	48	48	147
Hardwood	23	4	—	27
Total	74	52	48	174
Cumberland:				
Softwood	50	—	—	50
Hardwood	48	—	69	117
Total	98	—	69	167
Essex:				
Softwood	—	—	—	—
Hardwood	15	—	—	15
Total	15	—	—	15

CONTINUED

Table 6—Continued

County and ^a species group	Timber products			
	Sawlogs	Pulpwood	Other ^b	Total
Gloucester:				
Softwood	26	594	5	625
Hardwood	124	190	—	314
Total	150	784	5	939
Hunterdon:				
Softwood	—	—	—	—
Hardwood	65	—	147	212
Total	65	—	147	212
Mercer:				
Softwood	—	—	—	—
Hardwood	75	—	13	88
Total	75	—	13	88
Middlesex:				
Softwood	—	—	—	—
Hardwood	18	—	20	38
Total	18	—	20	38
Monmouth:				
Softwood	5	—	—	5
Hardwood	329	—	80	409
Total	334	—	80	414
Morris:				
Softwood	—	—	—	—
Hardwood	146	—	140	286
Total	146	—	140	286
Ocean:				
Softwood	13	310	8	331
Hardwood	36	—	25	61
Total	49	310	33	392
Passaic:				
Softwood	—	—	—	—
Hardwood	143	—	11	154
Total	143	—	11	154
Salem:				
Softwood	18	—	8	26
Hardwood	52	—	45	97
Total	70	—	53	123
Somerset:				
Softwood	—	—	—	—
Hardwood	64	—	11	75
Total	64	—	11	75
Sussex:				
Softwood	11	—	—	11
Hardwood	150	—	41	191
Total	161	—	41	202
Warren:				
Softwood	—	—	—	—
Hardwood	191	26	150	367
Total	191	26	150	367
All counties:				
Softwood	340	3,070	587	3,997
Hardwood	1,746	650	892	3,288
Total	2,086	3,720	1,479	7,285

^aCounties with no roundwood production are omitted.

^bIncludes veneer logs, piling, poles, posts, mine timbers, and miscellaneous products such as handle stock, fencing bolts, and dimension bolts.

Table 7.—Sawlog production and receipts in NEW JERSEY, by counties and species groups, 1970

[In Thousands of board feet, International ¼-inch rule]

County	Production		Receipts	
	Softwood	Hardwood	Softwood	Hardwood
Atlantic	952	72	950	—
Bergen	—	—	24	578
Burlington	67	1,329	30	2,611
Camden	—	384	—	—
Cape May	318	154	277	40
Cumberland	312	317	553	527
Essex	—	103	—	—
Gloucester	162	829	162	937
Hunterdon	—	430	—	190
Mercer	—	504	—	—
Middlesex	—	120	—	—
Monmouth	33	2,193	77	2,673
Morris	—	969	—	2,300
Ocean	81	242	36	—
Passaic	—	956	—	648
Salem	112	349	14	527
Somerset	—	428	—	—
Sussex	72	1,004	72	712
Warren	—	1,274	—	1,326
All counties	2,109	11,657	2,195	13,069
All species		13,766		15,264

Table 8.—Number of operating sawmills in DELAWARE and NEW JERSEY, by counties and types of sawmill, 1970

County	Type of sawmill		
	Custom	Commercial	Total
DELAWARE			
Kent	1	7	8
New Castle	1	—	1
Sussex	1	8	9
All counties	3	15	18
NEW JERSEY			
Atlantic	2	5	7
Bergen	—	2	2
Burlington	4	2	6
Camden	—	3	3
Cape May	—	4	4
Cumberland	1	4	5
Gloucester	—	4	4
Hudson	—	1	1
Hunterdon	—	2	2
Monmouth	—	5	5
Morris	—	2	2
Ocean	2	1	3
Passaic	—	1	1
Salem	—	4	4
Sussex	1	1	2
Warren	2	4	6
All counties	12	45	57

Table 9.—Veneer log production and receipts by species and origin of logs, NEW JERSEY, 1970

[In thousands of board feet, International ¼-inch rule]

Species	Cut and retained in N. J.	Shipped to other states		Total production	Receipts from other states			Total receipts
		Pa.	N.C.		Pa.	Del.	Md.	
Sweet gum	125	—	—	125	341	400	534	1,400
Soft maple	6	—	—	6	32	39	52	129
Red oak	—	65	—	65	—	—	—	—
Yellow-poplar	1,166	—	52	1,218	1,964	1,508	2,012	6,650
Sycamore	31	—	—	31	155	185	247	618
Walnut	3	—	—	3	9	12	16	40
All species	1,331	65	52	1,448	2,501	2,144	2,861	8,837

Table 10.—Production and disposition of sawmill residues by types of residues and species groups, DELAWARE, 1970

[In thousands of cubic feet]

Type and disposition of residues	All species	Softwoods	Hardwoods
Coarse:^a			
Fiber ^b	185.5	17.5	168.0
Fuel ^c	123.2	95.1	28.1
Agricultural ^d	75.9	74.1	1.8
All uses	384.6	186.7	197.9
Unused	33.2	27.3	5.9
Fine:^e			
Fiber	—	—	—
Fuel	—	—	—
Agricultural	330.6	195.8	134.8
All uses	330.6	195.8	134.8
Unused	33.5	6.9	26.6
All types:			
Fiber ^f	185.5	17.5	168.0
Fuel	123.2	95.1	28.1
Agricultural	406.5	269.9	136.6
All uses	715.2	382.5	332.7
Unused	66.7	34.2	32.5

^aCoarse residues include slabs, edgings, trimmings, and other material considered suitable for chipping.

^bIncludes residues for pulp along with residues for related products.

^cDomestic fuelwood only.

^dIncludes such uses as chicken litter and livestock bedding.

^eFine residues include sawdust, shavings, and other material considered unsuitable for chipping.

^fIncludes 120 thousand cubic feet of pulp chips shipped to two neighboring northeastern states.

Table 11.—Production of residues and disposition of byproducts from primary wood-processing plants by industrial sources, types of residues, types of use, and species groups, NEW JERSEY, 1970

[In thousands of cubic feet]

Industrial source ^a and type of residue	Type of use	All species	Softwoods	Hardwoods
Sawmill industry: Coarse ^b	Fiber ^c	31.1	16.6	14.5
	Fuel ^d	404.4	22.6	381.8
	Other ^e	171.0	41.2	129.8
	All uses	606.5	80.4	526.1
Fine ^f	Fiber	71.2	2.2	69.0
	Fuel	5.8	2.0	3.8
	Other	278.6	63.2	215.4
	All uses	355.6	67.4	288.2
Other primary industries: ^g Coarse	Fiber	47.9	—	47.9
	Fuel	82.2	—	82.2
	Other	—	—	—
	All uses	130.1	—	130.1
Fine	Fiber	—	—	—
	Fuel	271.5	—	271.5
	Other	—	—	—
	All uses	271.5	—	271.5
All industries:	Fiber ^h	150.2	18.8	131.4
	Fuel	763.9	24.6	739.3
	Other	449.6	104.4	345.2
	All uses	1,363.7	147.8	1,215.9
	Unused	48.4	8.0	40.4

^aExcludes woodpulp industry.

^bCoarse residues include slabs, edgings, trimmings, and other material considered suitable for chipping.

^cIncludes residues for pulp along with residues for related products.

^dIncludes all residues used as domestic or industrial fuel whether sold or given away.

^eIncludes agricultural uses, such as chicken litter and livestock bedding, and speciality items, such as cabins and novelties.

^fFine residues include sawdust, shavings, and other material considered unsuitable for chipping.

^gIncludes veneer, fencing, and cedar novelty plants.

^hIncludes 74 thousand cubic feet of residues used for pulp.



THE FOREST SERVICE of the 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.