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Development and Status of Arkansas' Primary Forest Products Industry

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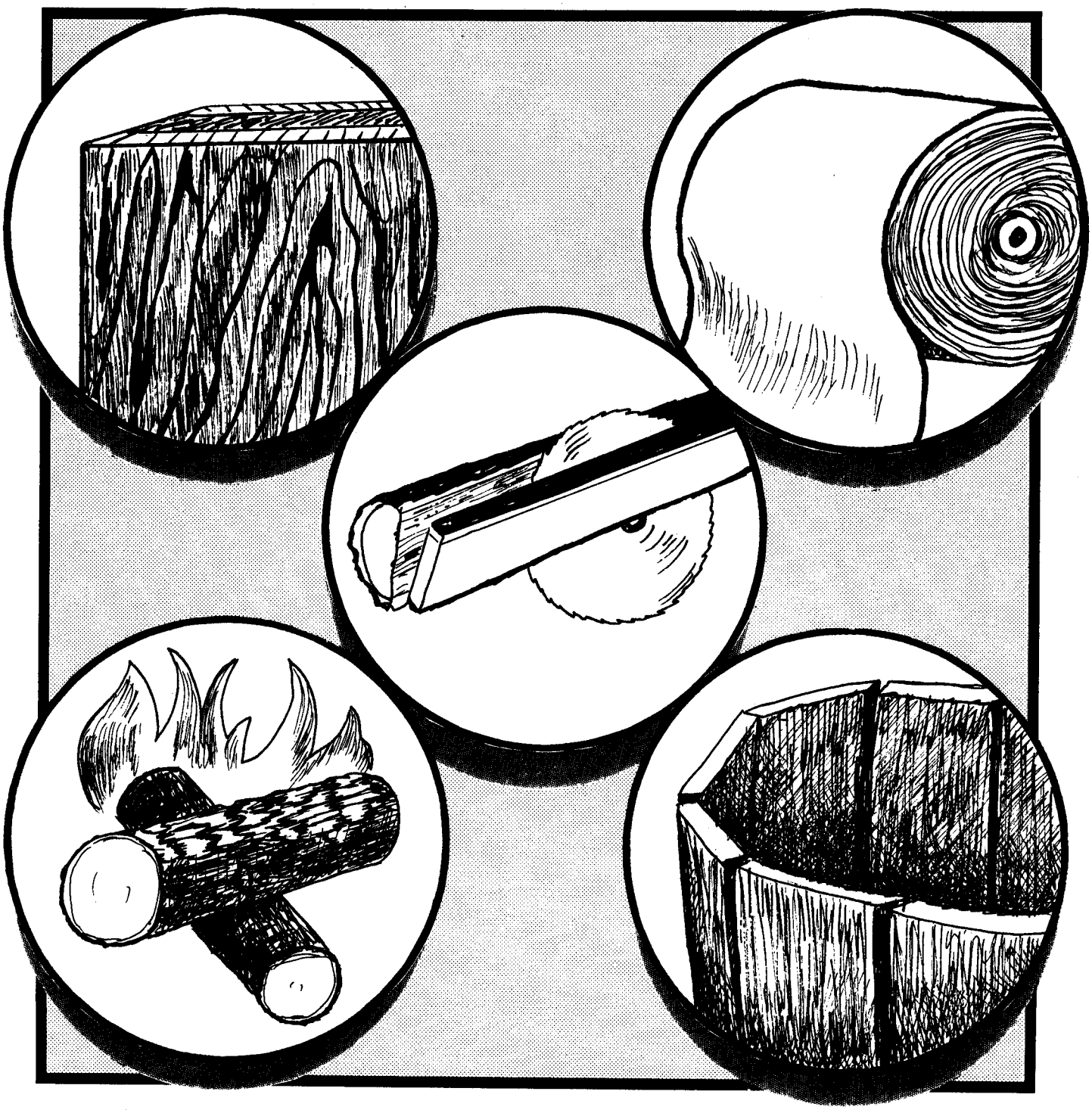

SUMMARY

The latest assessment of Arkansas' primary forest products industry conducted by the USDA Forest Service, Southern Forest Experiment Station, reveals that the State's forest industry has changed considerably over time as it coevolved with the changing forest resource base and adapted to new technologies and market shifts. Today, Arkansas' forest industry is, on the whole, smaller and more efficient, with higher roundwood harvests supplying fewer mills. However, the industry is also less diverse, being dominated by three sectors (lumber, pulp, and veneer), which developed around the softwood resources of the State.

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INTRODUCTION

The USDA Forest Service, Southern Forest Experiment Station, has periodically conducted assessments of Arkansas' primary forest products industry to determine the composition and size of the industry as well as its use of roundwood. The assessments have been conducted in conjunction with the surveys of the State's forest resources. These surveys started in the 1930's and have been repeated on 10-year intervals to the present. This most recent assessment coincides with the 1988 survey of Arkansas' forest resources and follows the development of the State's primary forest products industry to its current status.

INDUSTRY DEVELOPMENT THROUGH 1948

From initial settlement up until the 1880's, Arkansas' forests provided wood for local building needs as well as for domestic uses such as fuelwood and posts. Commercial use of Arkansas' forests did not develop until the late 1880's, when exhaustion of northern forests caused the forest industry to move southward. With its vast expanses of virgin forests in close proximity to expanding urban and industrial centers of the North and South, Arkansas was ideally suited to the development of a commercial forest industry.

Initially, the State's commercial forest industry consisted of large-capacity, permanently established sawmills equipped to convert large-size virgin timber into standard lumber (USDA FS 1937a, 1937b). These mills were dependent on extensive tracts of virgin timber and typically held vast acreages of such lands. For over 40 years, these mills exploited the virgin forests of the State. As the virgin stands were cut-over and as second-growth stands developed, smaller sawmills and nonlumber specialty mills came on-line (Smith 1940). These new mills were better suited to utilizing the generally smaller and lower quality timber in the residual and second-growth stands.

The smaller sawmills were generally portable and were operated intermittently to fill local needs for lumber and construction timbers. These mills could be moved from tract to tract, taking best advantage of the sometimes widely dispersed pockets of timber left after the virgin forests were liquidated. The nonlumber specialty mills were especially prevalent in the hardwood regions of the State and produced items such as cooperage, veneer, handle stock, charcoal, excelsior, and shingles (USDA FS 1938a, 1937b, Winters 1939).

By the time of the first complete survey of the State's forest resources in 1948, all of the virgin stands that initially drew the forest industry to the State were exhausted. In their place were cut-over stands and developing second-growth stands of generally smaller and lower quality trees. In fact, 2 out of every 3 acres of timberland in 1948 were classed as either sapling or pole-sized (Sternitzke 1956). The changing character of the forests, a direct consequence of the actions of the initial forest industry, caused major repercussions throughout the State's sawmill lumber industry.

Unable to efficiently exploit the smaller sized and often dispersed timber of the new forest, the large sawmills lost their competitive advantage to the generally smaller, portable mills that were better suited to utilizing the changing forest. This continuing trend peaked in 1948 when there were over 1,700 sawmills operating in the State. Of this number, only 100 of the mills were classified as large; i.e., annual output in excess of 3 million board feet (fig. 1). The small sawmills not only dominated in numbers, but also processed 60 percent of the State's lumber output in 1948 (Sternitzke 1956).

The changed forests also affected the character of the State's sawlog harvests. Although the exhaustion of the virgin forests reduced the availability of large-sized trees, hardwood sawlogs continued to be cut from what large trees remained in the remnant and second-growth forests (Sternitzke and James 1951).

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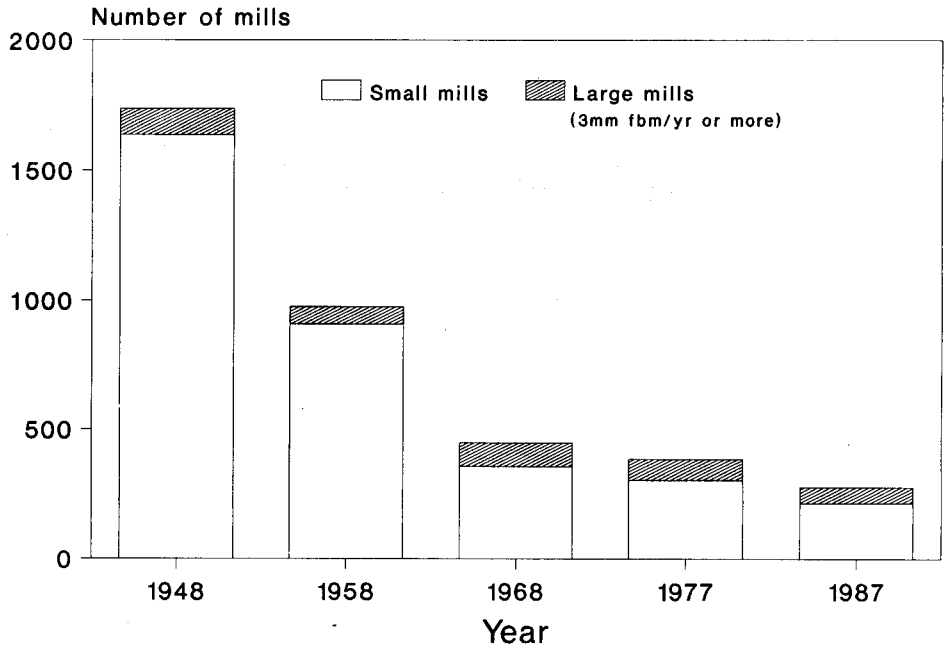

Figure 1.—*Size of Arkansas' sawmill industry by survey year.*

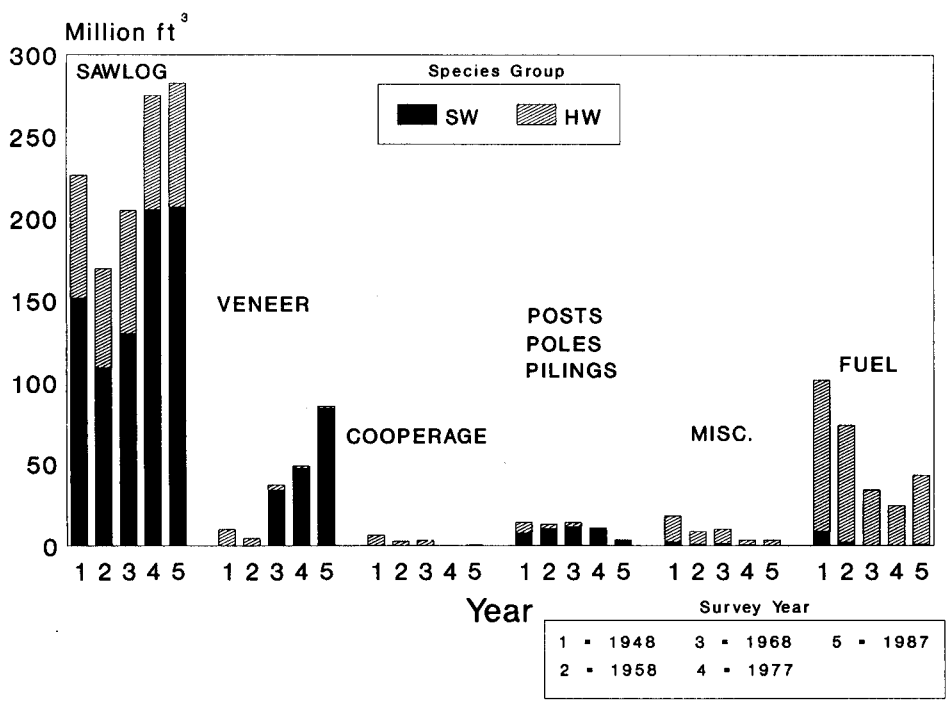

Figure 2.—*Arkansas' timber product output by product, survey year, and species group.*

As a result, the proportion of hardwood in the total sawlog harvest fell from one-half prior to the exhaustion of the virgin forests to one-third in 1948 (fig. 2). Softwood sawlog harvests, on the other hand, were necessarily being cut from smaller trees, with 6- to 12-inch trees accounting for 40 percent of the softwood sawlog harvest in 1948 (Sternitzke and James 1951).

In addition to these numerous sawmills, 240 nonlumber mills added diversity to Arkansas' forest industry (fig. 3). The pulpwood industry, still in its infancy with only two mills operating in the State, was starting to expand due to the defense-accelerated tax amortization program of World War II, advances in sulphate processing of southern pine pulp, and the available supply of small softwoods. The State also had an established veneer industry producing mostly container veneer for the packaging and shipping industries. Small amounts of plywood and face veneer were also being produced for use in furniture manufacture. This industry was completely dependent on the hardwood resources of the State, preferring high-quality soft hardwoods, mostly gums, of at least 20 inches in diameter (Sternitzke and James 1951).

Another established industry dependent upon the hardwood resource of the State was the cooperage industry. In 1948, Arkansas was a leading supplier of tight cooperage produced from high-quality white oak and used in the manufacture of whiskey barrels. Additionally, soft hardwoods were also in demand for the production of slack cooperage used in the packing and shipping industries. The State also had a post, pole, and piling industry that was beginning to develop around the ability of southern pine to take wood-preservative treatments. However, local use of hardwoods still accounted for a large proportion of the industry's output in 1948. Arkansas' forest also supported numerous specialty mills that produced a variety of products (handle and furniture stock, charcoal, excelsior, and shingles), mostly from the hardwood resources of the State. The number one use of Arkansas' hardwood resource, however, was firewood, which was used for domestic heating and cooking.

INDUSTRY DEVELOPMENT FROM 1948 TO 1958

Over the next 10 years, the character of the State's forests continued to change. The softwood resource expanded due to the maturation and increased management of the young forest found in 1948, and the hardwood resource deteriorated as a result of continued high-grading of selected species, landclearing, and management practices discriminating against hardwoods. These resource changes, as well as changing markets and technological advances, would have significant ramifications for the forest products industry in the State.

Lumber Industry

By 1958, the trend of increasing numbers and output of small sawmills had been reversed (fig. 1). In total, 762 sawmills closed over the 10-year period (Sternitzke 1960). These mills were primarily small operations. At the same time, production shifted over

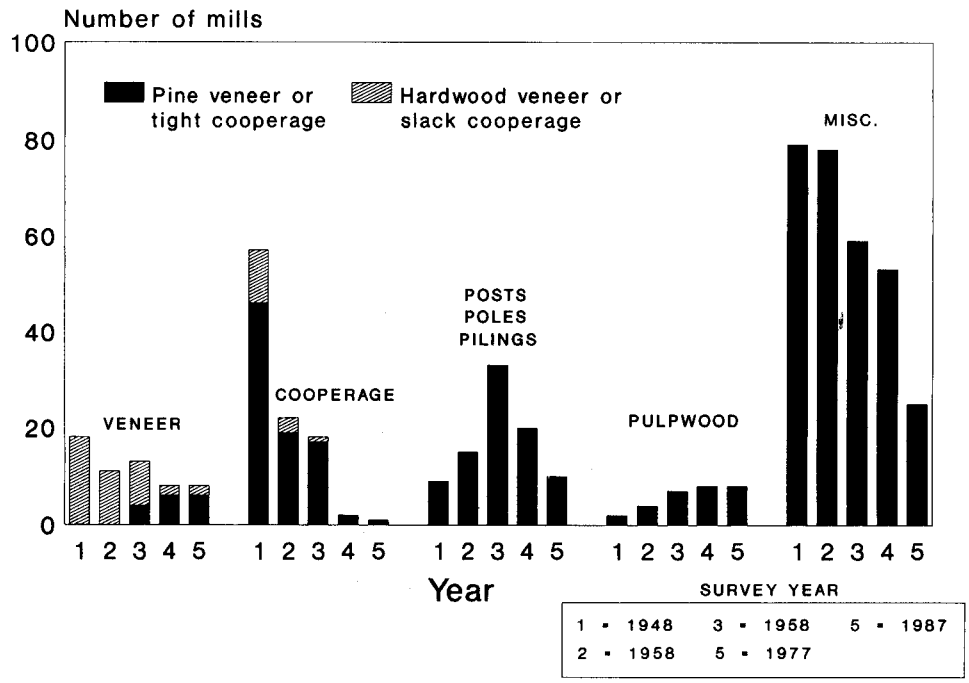

Figure 3.—*Size of Arkansas' primary wood products industry by mill type and survey year.*

to the more efficient large mills, which processed 65 percent of the lumber output in 1958 (Sternitzke 1960). This shift in competitive advantage back to larger sawmills resulted from technological advances spurred by the need for sawmills to efficiently convert small logs into lumber and the need for an economical source of pulping fiber to supply the expanding pulping industry. The technological advances that answered these two needs were the debarker and chipper and the chipping headrig (Anderson 1987).

These technologies allowed sawmills to convert more of each small log into usable products, while providing the pulping industry with quality debarked chips from the denser outer cores of the logs at prices comparable to roundwood. Because of the preference for softwood fiber in the pulping industry, as well as the high cost of implementation, the new chipping technologies were generally confined to the larger permanently established softwood sawmills. By 1958, over 50 large sawmills in the State were equipped with the latest chipping technology (Sternitzke 1960). Once installed, the chipping technologies provided a competitive advantage over smaller mills, which could only produce one product from each log rather than several (Anderson 1987). As a result, most of the smaller sawmills operating in 1958 were hardwood mills.

Pulp Industry

The expanding softwood resource of the State, plus the new source of pulping fiber provided by the chipping technologies, fueled an expansion of the State's pulping industry. Two new mills, plus capacity increases in existing mills, tripled the pulping capacity in the State (figs. 3, 4). Accompanying this jump in capacity was a rise in Arkansas' output of pulpwood, with chipped residues from sawmills supplying 20 percent of the total (fig. 5).

Veneer Industry

Conditions weren't as favorable for those segments of the State's forest industry typically dependent on high-quality hardwoods. Persistent high-grading of selected species was beginning to lead to shortages in suitable furnish. This, coupled with changing market conditions, had negative effects on the veneer and cooperage industries. In 1958, Arkansas' veneer industry had seven less mills, and veneer-log output was half of what it had been a decade earlier (figs. 2, 3). Competition from substitutes, mainly paperboard and plastics, reduced container veneer's market share of the packaging and shipping industries. Of the seven veneer mills that closed over the period, four were container veneer mills (Sternitzke 1960), evidence of the role substitutes played in the market. In addition to market modifications, changes in the hardwood resource were starting to affect the industry built around it. Continued high-grading was diminishing the supply of acceptable veneer logs, causing substitution with less-desirable species. In 1948, gums constituted 78 percent of the veneer logs cut, but by 1958 the proportion had dropped to 57 percent, with other soft hardwood species substituting for the gums (Sternitzke 1960).

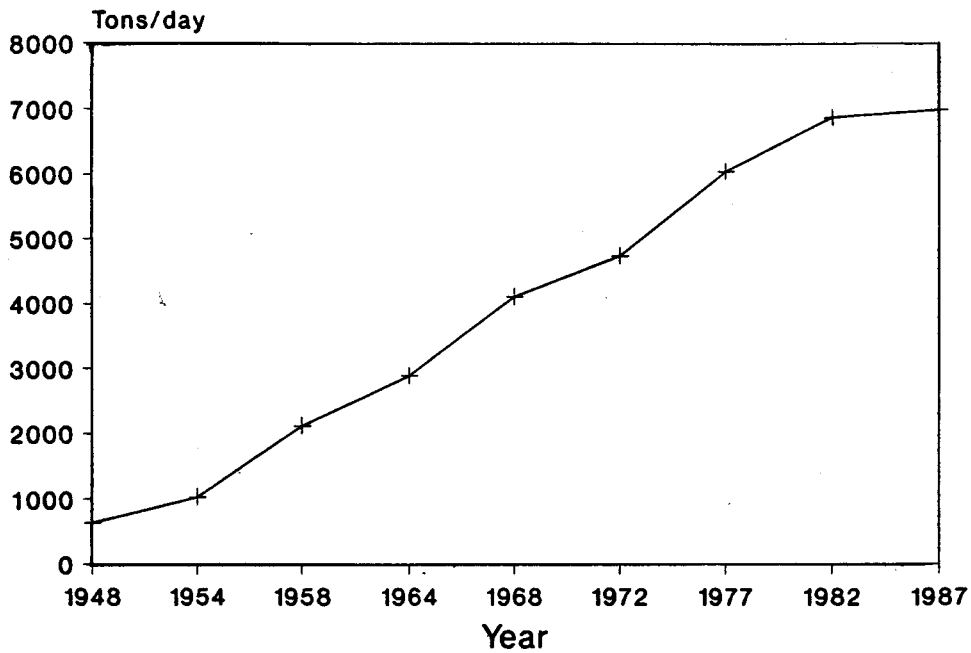

Figure 4.—*Arkansas' pulping capacity.*

Cooperage Industry

Similar trends occurred in the cooperage industry. From 1948 to 1958, the number of mills operating and cooperage bolt harvest fell by more than half (figs. 2, 3). Although reduced, Arkansas' cooperage industry still remained a leading supplier of tight cooperage in 1958. The slack cooperage industry, however, fell under the same pressure as the veneer industry—mainly competition from substitutes in the packing and shipping industries and shrinking inventories of preferred soft hardwood species.

Miscellaneous Industries

In the remaining nonlumber industries, the post, pole, and piling industry increased in numbers and started shifting emphasis towards treated pine and away from local-use hardwoods (figs. 2, 3). The miscellaneous specialty mills remained stable in number, but timber harvests fell by half and remained predominantly hardwood. With increasing urbanization, Arkansas' population opted for more convenient gas and electric energy for heating, causing a decline in fuelwood consumption.

INDUSTRY DEVELOPMENT FROM 1958 TO 1968

Into the 1960's, segments of the State's forest industry dependent upon the ever increasing pine resource continued to expand. Unfortunately, the continued trends of the past reduced the quality and quantity of the hardwood resource, causing a shift in species composition towards less desirable trees and darkening the future of the industries dependent on the hardwood resource.

Lumber Industry

As a direct consequence of the new technologies implemented a decade earlier, the sawmill industry continued its trend towards fewer, larger, and more efficient mills (fig. 1). Between 1958 and 1968, the number of sawmills decreased by more than half, while sawlog harvests actually increased (fig. 2). Much of the increase in efficiency was concentrated in the larger mills, 10 of which produced 40 percent of the State's lumber output in 1968 (Van Sickle 1970).

Pulp Industry

Arkansas' pulping industry took off in the 1960's due to an increasing softwood resource and increasing demand for pulp and paper products. Pulping capacity doubled with the startup of three new mills and expansions of existing mills (figs. 3, 4). With this increased capacity came an accompanying rise in pulpwood production (fig. 5). The effects of the chipping technology implemented a decade earlier were especially evident in the dramatic rise in chipped residue production, which supplied one-third of the State's output in 1968. Also evident in this period was an increasing acceptance of hardwoods as a source of pulping fiber. This was the result of pulping technology advances that expanded the number of hardwood

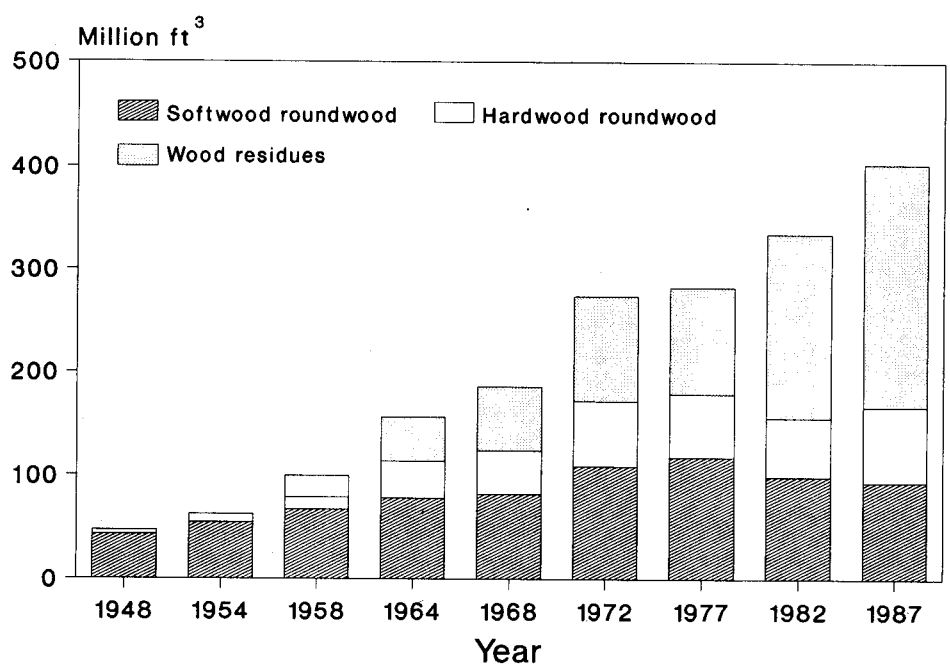

Figure 5.—*Arkansas' pulpwood production.*

species suitable for pulping. Initially, soft hardwoods comprised most of the hardwood pulping fiber, but by 1968 hard hardwood was out-supplying soft hardwood by four to one (Beltz 1969).

Veneer Industry

As with the sawmill industry in the 1950's, new technological advances revitalized the States' veneer industry in the 1960's. Spurred by an increasing softwood resource and proximity to eastern housing markets, the southern pine plywood industry was pioneered in Arkansas in 1963. By 1968, there were four southern pine plywood mills operating in Arkansas (Beltz 1970). This startup industry shifted the veneer-log harvest in the State from entirely hardwood a decade earlier to almost exclusively softwood in 1968 and made veneer logs the number three product removed from Arkansas' forest (fig. 2).

The small amount of hardwood produced was used to supply the shrinking hardwood veneer industry. Much of the reduction in the hardwood veneer industry was associated with the container veneer sector, which was still feeling the pressures of competition from substitutes and diminishing raw material supplies. This, and increasing demand for oak and pecan furniture, caused the species composition of the State's hardwood veneer-log harvest to shift towards hard hardwoods.

Cooperage Industry

No new technology or market changes came to the rescue of the cooperage industry during the 1960's. A victim of both changing markets and resource availability, this industry has been on a downward slide since 1948. Although the harvest of cooperage bolts in Arkansas remained at 1958 levels, tight and slack cooperage industries each lost two mills, with the slack cooperage industry reduced to one mill by 1968 (figs. 2, 3).

Miscellaneous Industries

In the other nonlumber industries, the post, pole, and piling industry doubled in size and continued to increase its use of softwoods (figs. 2, 3). The number of miscellaneous specialty mills dropped considerably, while roundwood harvests increased slightly. Fuelwood consumption fell by more than half as Arkansas' population continued to become more urbanized.

INDUSTRY DEVELOPMENT FROM 1968 TO 1977

Between 1968 and 1977, the softwood resource continued to increase, albeit at a slower rate because of greater demand created by past industrial expansions, and the hardwood resource continued its downward trend. These conditions once again favored the softwood sectors of the forest industry.

Lumber Industry

As in 1968, the sawmill sector became more efficient as more sawlogs were processed through fewer mills. Over the period, 60 sawmills closed (most of these were small), while Arkansas' sawlog harvests increased (figs. 1, 2). All of the increased harvest was supported by the increasing softwood resource. The trend of increasing efficiency of larger mills also continued as 81 large mills processed 90 percent of the States' lumber output in 1977 (Bertelson 1980). These large mills also continued to process mainly softwoods, while the small mills processed mainly hardwoods.

Pulp Industry

The pulping industry added one new mill in this decade (fig. 3). This expansion, combined with capacity increases in the existing mills, caused pulpwood demand to increase as well (figs. 4, 5). As past trends would indicate, hardwood roundwood and wood residues accounted for larger proportions of the increased production over the period. The doubling in hardwood was again the result of pulping technology advances, and the jump in chipped mill residues was consistent with the increased sawlog harvest in 1977.

Veneer Industry

The veneer industry continued its transition from a hardwood to a softwood industry, with the addition of two new softwood plywood mills and the closing of seven hardwood mills during this time frame (fig. 3). Results of a veneer study in 1972 (Bertelson 1974) showed eight softwood plywood mills operating in Arkansas. This peaking of mills, followed by a subsequent drop, reflects a maturing industry in which production is concentrated in the most efficient mills and is in balance with demand. Veneer-log harvests to supply this maturing industry were almost all soft-

wood with a minor amount of hardwood, mostly oak, supplying the dwindling hardwood veneer industry (fig. 2). This shift from soft hardwoods to oak is a reflection of changing markets and wood availability.

Cooperage Industry

While the softwood sector of the veneer industry continued to boost the veneer industry in the State, continued market changes and resource availability problems spelled the end of the slack cooperage industry and reduced the tight cooperage industry to a small percentage of its former output (figs. 2, 3).

Miscellaneous Industries

In the other nonlumber industries, the post, pole, and piling industry, like the veneer industry, seems to have gone through a maturing process. From a peak number of mills in 1968, the industry lost more than one-third of these mills by 1977 (fig. 3). Production of roundwood to supply the remaining mills shifted almost completely to softwood (fig. 2). Miscellaneous mills declined as did the harvest of roundwood to supply them. Fuelwood use continued to decline to a reported low in 1977. However, with the oil crisis of the 1970's raising the price of the alternative fuels and causing a resurgence in demand, fuelwood use may have actually hit a low earlier than 1977.

CURRENT FOREST INDUSTRY

Arkansas' current forest industry is a direct consequence of the interactions of the forest industries and forest resources of the past, as influenced by changing market conditions and technological advances. Today, Arkansas' forest industry is, on the whole, smaller and more efficient, with higher roundwood harvests supplying fewer mills (fig. 6). The industry is, however, less diverse, being dominated by three sectors (sawlog, pulpwood, and veneer), which in total accounted for 91 percent of the State's roundwood harvest in 1987. These three sectors developed around the expanding softwood resource of the State, and today, 2 out of every 3 cubic feet of roundwood harvested are softwood (fig. 7). These current conditions contrast with the situation in 1948 when the three leading forest products were sawlogs, fuelwood, and pulpwood, and harvests of hardwood equaled softwood.

Lumber Industry

In the sawmill sector, economic conditions between surveys helped to continue the past trend of concentrating more production in fewer and larger mills. In the early 1980's, increasing inflation, interest rates, and dollar values held down domestic spending, re-

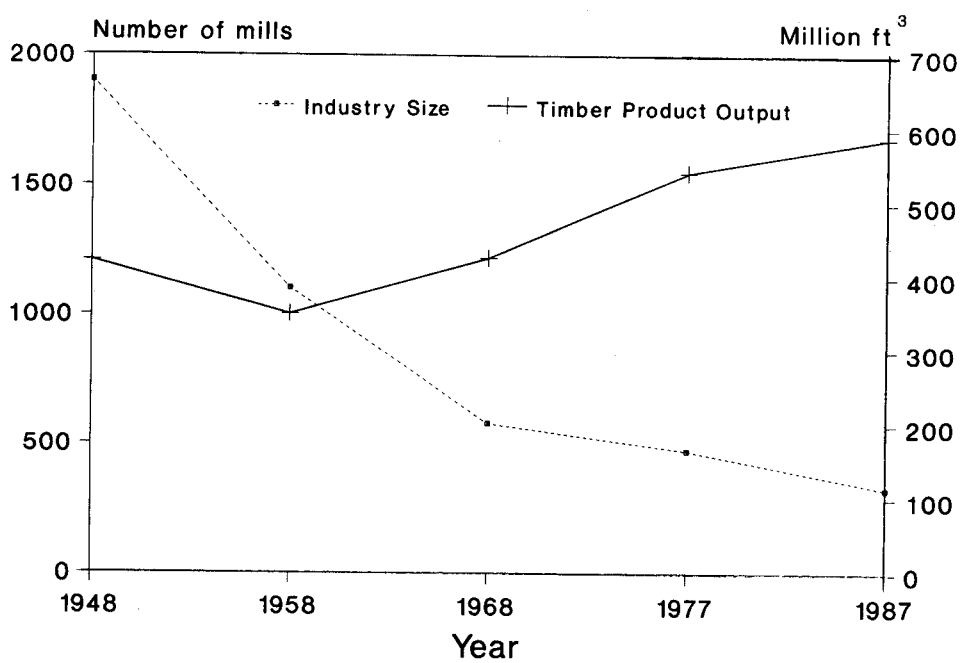

Figure 6.—*Number of primary forest product industries and timber product output in Arkansas, 1948–1987.*

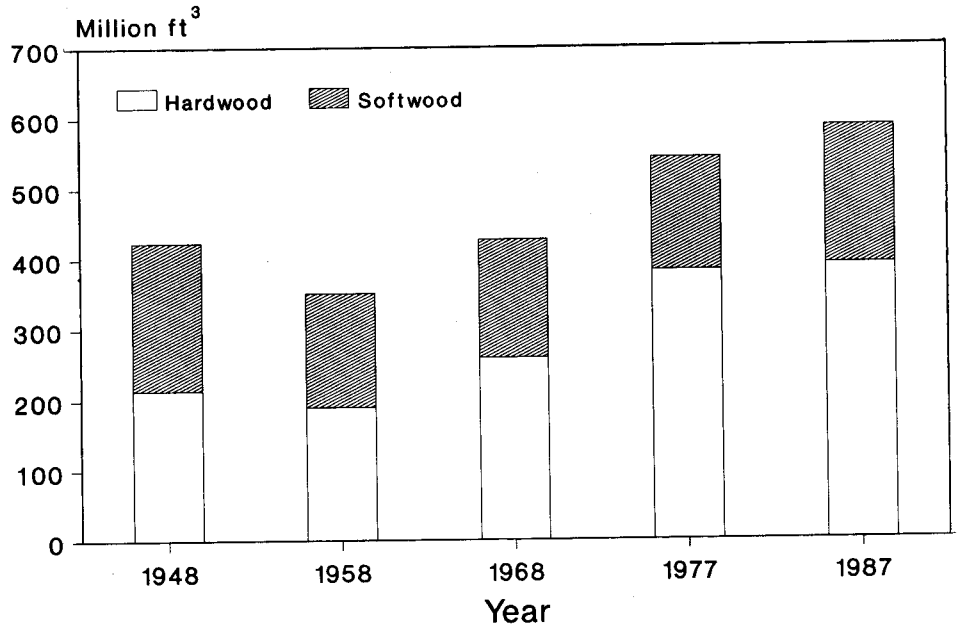

Figure 7.—*Arkansas' timber product output by species group and survey year.*

duced housing starts, and slowed exports. The depression of the lumber industry resulting from these economic conditions was further exacerbated by the infiltration of southern lumber markets by foreign competition and erosion of consumer confidence in southern lumber products due to quality problems associated with juvenile wood (Senft and others 1985).

Conditions for the lumber industry started to improve in the mid-1980's as low inflation, low interest rates, and a weak dollar strengthened both domestic consumer markets and foreign export markets and revitalized the housing industry. At the same time, the ability of southern pine lumber to take wood-preserving treatments opened new markets in outdoor uses of southern pine lumber, bolstering its share of the total domestic lumber market. As a result of these economic swings, 110 mainly small sawmills closed between 1977 and 1987, allowing more of the increased sawlog harvest to be processed by the more efficient and larger remaining mills (figs. 1, 2). In 1987, large mills processed 96 percent of the State's sawlog harvest.

Since the inception of chipping technology in the 1950's, large sawmills have processed mainly softwoods, but the proportion of hardwood processed by large mills has increased from 20 percent in 1977 (Bertelson 1980) to 25 percent in recent years. Much of this is due to pulping technology advances that have allowed increased use of all species of hardwood, eliminating much of the species sorting problems of the past and allowing the larger chipper-equipped sawmills to process more hardwood with the same economic advantages associated with softwoods. Such technological advances continue to shift production and competitive advantage to the larger and more efficient mills and at the same time eliminate the less-efficient mills.

New technologies currently in the development stages, such as Edge, Glue, and Rip, Best Opening Face, and Saw-Dry-Rip, promise to increase both the quantity and quality of lumber produced from each log (Haygreen and others 1986; Kellison 1986). Because of the capital investments needed to implement new technologies, the product recovery benefits associated with the future technologies will likely favor the larger mills and further enhance their competitive advantage over small mills. As such, Arkansas' sawmill sector will likely continue to get smaller and more efficient as more and more of the production is concentrated in the larger and more efficient mills. However, there are some developing technologies that could drastically affect the traditional sawmill industry in the State. These developing technologies include the possibility of making structural lumber and timbers from reconstituted wood chips and veneers (Kellison 1986, Pease 1987). If these developing products can be cost-competitive, and possess structural performance properties equal to or surpassing traditional lumber products, they could gain acceptance in traditional lumber markets in the future.

Pulp Industry

The story of the pulping sector of the State's forest industry has been one of continued growth from the beginning. Although the number of mills has re-

mained the same as in 1977, pulping capacity increases have taken place at the existing mills as the economic conditions of the early 1980's forced some mills to modernize in order to stay competitive (fig. 4). Over the years, capacity increases have been answered by pulpwood production increases with hardwood roundwood and wood residues providing increasing proportions of the total pulpwood production. These trends continued into 1987, with a major rise in wood residue production, a smaller rise in hardwood roundwood production, and a fall in softwood roundwood production since 1977 (fig. 5).

The rise in hardwood roundwood is a continued response to pulping technology advances that have increased the use of hardwoods, regardless of species, in making pulp and paper products and the availability of the resource, which has generally been underutilized and available at lower costs (May 1988). This trend of increasing use of hardwoods should continue into the future, especially if developing technologies in press drying are successful in integrating more hardwood use in linerboard manufacture (Ince 1986). At some point, this trend will level off as demand causes prices and availability of hardwood to approach those of softwood furnish.

Since the inception of chipping technologies in the 1950's, wood residues have been claiming an increasing share of the State's total pulpwood furnish. This trend has continued into the 1980's, with a major jump in wood residue production. However, some of this increase in wood residue production may be due to the difficulties in distinguishing between wood residues and chipped roundwood in recent years as merchandising and satellite chipping operations have come on-line.

Because of their high quality and favorable prices, wood residues should continue to be a major source of pulping fiber. Their share of the total production may even increase in the future as more sawlog processing is concentrated in larger and more efficient mills equipped with chipping equipment. There is also the possibility that if the developing technologies in the other primary wood processing industries are successful in increasing product recovery from every log, wood residue production may decline in the future. Overall, the production of wood residues will generally be tied to the level of activity in the other primary wood processing industries in the State.

Veneer Industry

Over the years, technological advances, market changes, and resource availability have changed the veneer industry of the State from a hardwood industry in 1948 to a softwood plywood dominated industry in 1987. The number of softwood veneer mills operating in the State has remained unchanged since 1977 (fig. 3), a sign that the maturing process of the early 1970's has ceased. At the same time, softwood veneer-log harvests in the State have almost doubled in response to the turnaround in the economy in the mid-1980's (fig. 2). Although the current veneer industry would appear to be in good shape, the increasing competition from reconstituted panel products and the availability of suitable furnish provide concern for the future.

Reconstituted panel products, such as the oriented strandboard and waferboard that have been introduced in recent years, are increasing their share of traditional plywood veneer markets. Similar functional performance and lower cost are the main reasons for their market acceptance (Dickerhoof 1986, Seward and Sinclair 1988). The lower cost is due in part to lower raw material costs because these products utilize traditionally underutilized, smaller, and poorer quality trees. There are also concerns whether there will be adequate supplies of larger, high-quality softwoods to meet the traditional veneer industries' needs in the future as the acres in natural pine stands are diminished in favor of pine plantation forced on short rotations by economic realities (Klueuder and others 1988).

In order to maintain their market share in the future, the traditional veneer industry will have to become more efficient by maximizing product recovery from smaller logs. New technologies currently being developed and implemented, such as the spindleless lathe, will address these needs by allowing more product to be turned from smaller logs, while decreasing the turn around time between logs (Baldwin 1987, Kellison 1986, Spelter and Sleet 1989). At the same time, new product markets for reconstituted construction timbers made from laminated veneers may help bolster the traditional veneer industry.

Miscellaneous Industries

The remaining forest industries of the State make up a rather small portion relative to the top three sectors; however, they add diversity to Arkansas' forest industry and enhance the utilization of Arkansas' forest resource. The cooperage industry, down to one tight cooperage mill and negligible timber product output in 1987, has become virtually nonexistent today, the victim of changing markets and resource availability problems. In contrast, the post, pole, and piling industry grew rapidly, taking advantage of the expanding southern pine resource and its ability to take wood-preserving treatments. The industry peaked in the late 1960's and started its fall to present levels as part of a maturing process (fig. 3). During the period, timber production to meet the demands of this industry shifted to softwoods as markets accepted preservative-treated pines and local use of hardwood posts declined as Arkansas' population became more urbanized.

The miscellaneous specialty mills have been on a downward trend in both numbers and timber product harvests since 1948 (figs. 2, 3), mostly due to competition from substitutes. With only half as many mills operating as in 1977, this sector of the industry is composed mostly of handle and charcoal mills today. Both of these are still facing pressures from competition: plastics are replacing wood handles and mesquite charcoal is gaining popularity.

Fuelwood use in the State had been declining since 1948, but was revitalized with the onset of the oil crisis of the 1970's. The 1987 fuelwood production figures are from Greene's 1985-86 survey and are the most current figures available. Earlier estimates of fuelwood consumption, 47.3 million cubic feet in the 1984-85 season (Greene 1987) and 63.8 million cubic feet in the 1980-81 season (Skog and Watterson 1985) suggest that fuelwood consumption has been declining since the mid-1980's, when glutted oil markets again reduced prices of more conventional heating fuels. This seesaw effect will likely continue into the future as fuelwood consumption varies with the cost of more conventional heating fuels.

FUTURE FOREST INDUSTRY

It is clear that today's forest industry is the culmination of an evolutionary process involving the forest resources, forest industries, product markets, and technological advances of the past. No doubt these same factors will interact to shape the character of tomorrow's forest industry. Based on the character of the current forest industry and developing trends in the forest resources, product markets, and technological advances, it would appear that Arkansas' forest industry is at a crossroads. Will the traditional forest product industries dominant today maintain their position in the future, or will their places be usurped by new forest industries based around reconstituted wood products?

The current trend of the softwood resource of the State moving from a natural stand to a plantation-based resource has raised concerns over the availability of large-size timber in the future and possible exacerbation of quality problems associated with juvenile wood as plantation rotation ages are shortened by economic necessity (Kluender and others 1988). If these concerns are legitimate, then today's traditional lumber and veneer industries, developed around the softwood resource of the State, will have to become more efficient at converting smaller and lower quality logs into finished products. This may be made possible through implementation of new technologies being developed now or in the future. If not, then market share will undoubtedly be lost to the developing reconstituted lumber and panel product industries. These industries seem better suited to utilizing the changed softwood resources and the historically degraded hardwood resources of the State because they are less sensitive to the species, size, and quality of the raw material supply. If these new reconstituted wood product industries become dominant, they will increase competition for portions of the forest resource once predominantly the domain of the pulping industry.

Whether composition of the State's forest industry remains the same, moves toward reconstituted wood products, or reaches some middle-ground, only time will tell; but undoubtedly the forest industry of the State will continue to evolve in order to best utilize the changing forest resources and new technological advances to meet future market demands.

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The development of Arkansas' primary forest products industry is presented by following the changes in numbers and types of mills operating through time as well as the State's production of roundwood to supply the changing industry.

Keywords: Cooperage, fuelwood, pulpwood, sawlog, veneer.