



TIMBER, LOGS & SAWMILLS: Timber and Logs are, obviously, the “lifeblood” of the hardwood industry and the continued operation of most sawmills. And likewise, few topics garner as much attention from contacts at *all* levels of the forest products industry. In fact, many contacts put issues relative to Timber and Logs, such as costs, quality and accessibility, at the very top of their list of *concerns* for the future.

During the 1990’s, the forest products industry became the target of preservationist movement, and the hardwood industry watched with concern as many of the Western forests were closed to logging which resulted in many mill closures in the region. However, early on, most of the preservationist movement was focused on the numerous public lands West of the Mississippi, and there was relatively little disruption to logging activity in the Eastern hardwood forests.

By the time the mid-to-late 90’s rolled around though, that changed dramatically. Despite the fact that a relatively small portion of the total Eastern hardwood forest is on public land (see graph, “*Percentage Ownership of Hardwood Growing Stocks on US Timberland by Volume*” in the section on **SUPPLY**), the preservationist movement shifted its focus East and began to disrupt timber sales and logging activity in the hardwood industry’s backyard.

Although the struggle with legislation and regulation is still ongoing, the entire forest products industry breathed a sigh of relief in 2003 when Congress passed and President Bush signed the “*Healthy Forest Initiative*”.

Moving into 2004, the accessibility, cost and quality of Timber and Logs remained at the forefront of conversations with contacts, particularly sawmill operations, throughout the hardwood industry. Other aspects of Timber and Logs, such as the Export of veneer and saw logs also remained hot-button topics, particularly given weather conditions in specific areas and concerns over log supply, and *affordable* raw material for the continued existence of the sawmill segment of the industry.

Other costs such as labor and insurance, coupled with availability, quality and cost of Timber and Logs, and cash flow have continued to contribute to a “squeeze” on many sawmill operations. A great deal of conversation has been offered in the area of negative impact and the loss of sawmill operations over the past number of years in the hardwood industry. However, much of this conversation has been speculative in that it is very difficult to gauge the number of sawmills that are no longer in business and the resulting impact on Eastern US hardwood production (See commentary and graph on “*Eastern U.S. Hardwood Production*” in the section on **SUPPLY**).

The following Guest Editorial, “*The Number Of Hardwood Sawmills Continues to Decrease – Is that Bad?*” is presented by *William G. Luppold, Ph.D.*, of the USDA Forest Service Northeastern Research Station – Forestry Sciences Laboratory. In this article, Dr. Luppold examines many of the key issues surrounding the size and loss of sawmills, which has influenced Eastern US hardwood production and that could well play an important role in the future activity of hardwood supply and pricing.

The Number of Hardwood Sawmills Continues to Decrease – Is that Bad?

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The past five years have been tumultuous for the hardwood sawmilling industry; lumber prices have been erratic, stumpage prices have remained high, and production has declined by nearly 17 percent. When

such a decline in production occurs, many sawmills go out of business and most of the remaining mills reduce production. However, the number of hardwood sawmills has been declining for over 30 years as modern,



“more efficient” mills have forced older mills out of business. With this trend in mind, I will examine how the sawmilling industry has changed over the last decade for seven states in the Northern and Appalachian hardwood regions (*Table 1*). The selection of these states is based on data available from published sawmill directories and the resulting analysis may not be applicable for the Southern region. Still, the states listed in *Table 1* currently produce nearly half of the hardwood lumber manufactured in the eastern United States.

In this analysis, I will first examine changes in the total number and average size of mills producing more than 1 million board feet (bf) a year. While smaller mills and custom mills (producing under 1 million bf) may account for between 3 to 10 percent of the lumber produced in the states listed in *Table 1*, the variation in the number of these mills from state to state leads to misleading estimates of the average size of commercial operations. However, I will use an estimate of total lumber production when developing estimates of “market concentration” as measured by the percent of production associated with larger mills.

The term “large mills” in the hardwood industry is relative to time and region. When I first started to examine the hardwood industry back in the late 1970s, a large Appalachian mill could be defined as one that produced over 3 million bf a year. Even in the 1990’s only 20 percent of the lumber produced in Missouri came from mills manufacturing over 5 million bf a year while over 58 percent of the lumber produced in West Virginia was manufactured by mills with capacities of over 10 million bf per year. In this paper, I will examine changes in market concentration by using two size classes: mills producing 5 million bf or more per year (large mills) and mills producing 10 million bf or more per year (very large mills).

In order to assess the impact of the 1999 to 2003 production decline on mill numbers and size, I will conduct a detailed examination of the sawmilling industry in West Virginia. The sawmill directories for this state provide estimates of actual production for mills producing more than 2 million bf per year. This

type of information allows one to separate the decline in production associated with mills reducing hours of operation versus mills going out of business. I also will examine how the number of mid-size mills (mills producing between 1 and 4.9 million bf) varies by state and how this portion of the industry has changed over the past 3 years.

Changes In The Northern and Appalachian Sawmilling Industry

A cursory examination of *Table 1* reveals the state-to-state diversity of the hardwood industry with regard to variations in the number of mills and average mill size. The first surprise revealed in *Table 1* is that the number of sawmills with annual production exceeding 1 million bf declined in most states but increased slightly in Pennsylvania and Missouri. During the 1970s and 1980s, these two states contained hundreds of small mills producing less than a million bf; some of these mills have increased production to become mid-size mills. In contrast, West Virginia, Indiana, and Michigan had large declines in mill numbers primarily as a result of a large decline in the number of mid-size mills.

By 2001 there were approximately 109 mills producing in excess of 10 million bf in the 8 states listed in *Table 1*. This represents over a 40 percent increase in the number of very large mills since the early 1990s. The increased number of these very large mills was the primary reason why average mill size increased between 9 and 53 percent for these eight states since the early 1990s. The only state not to have an increased number of very large mills was Missouri, which is also the state with the smallest increase in average mill size.

As expected, as the size of the average hardwood sawmill grew, the importance of larger mills has increased in most states (*Table 2*). The greatest change occurred in Indiana, a state that has not historically been associated with larger sawmills since the 1920s. However, a combination of small increases in total production, a 30 percent decline in the number of mid-size mills, and a nearly 30 percent increase in the number of mills producing over 5 million bf leads to a large increase in the market concentration associated



with large and very large mills (*Table 2*). For many of the same reasons, Michigan also experienced a large increase in market concentration associated with mills producing 5 million bf or more.

Changes in West Virginia Since 2001

Of all states examined, West Virginia had the greatest market concentration associated with large and very large mills (*Table 2*). In 2000 nearly 60 percent of the lumber produced in this state was manufactured by 27 very large mills. While Pennsylvania and Kentucky contained larger individual mills, the collection of larger mills in West Virginia in 2000 was quite striking. However, between 2000 and 2003 production in West Virginia has declined by 17 percent; most of the decline was associated with reduced production or closures of mills producing more than 5 million bf. An examination of how this decline was allocated among the mills in West Virginia may provide some insight on how the industry has reacted to 4 straight years of declining production.

In 2000, West Virginia had 27 very large mills collectively producing 443 million bf of hardwood lumber (*Table 3*). By 2003, the number of very large mills had declined to 23 and production by these mills had declined to 359 million bf. While there were four fewer very large sawmills in 2003, only 2 of these mills actually closed (although other mills were sold to new owners). However, 18 of the 25 remaining very large mills reduced production and 4 of these mills reduced production to less than 10 million bf per year. These cutbacks resulted from halting a second shift or otherwise reducing hours of operation. Furthermore, the decline in the number of very large mills due to closure was in part offset by the opening of a new mill and an increase in production levels by a mill previously producing less than 10 million bf.

Between 2000 and 2003 the number of large mills in West Virginia declined from 22 to 19; and combined production by these mills decreased from 155 to 124 million bf (*Table 3*). In total, 14 large mills either closed or reduced production levels. The reduced production in large and very large mills resulted in a small decline

in market concentrations of larger mills. Still, this decline is significant because in other downturns I have examined over the last 25 years, market concentration of larger mills has increased as small and mid-size mills have permanently closed. Still, this decline should be viewed as temporary and market concentration will again increase when larger mills increase hours of operation.

Declines In The Number of Mid-Size Mills

While declining lumber production in West Virginia and other states with a relatively high market concentration associated with large and very large mills was most likely the result of reduced hours of operation, the reported decline in other states appears to have resulted from the demise of small and midsize sawmills. As previously noted, the number of mid-size mills had already declined in many states including Michigan, Indiana, and New York. Still, there are several states that contain a large number of these mills (*Figure 1*); the most notable are Pennsylvania, Missouri, and Kentucky. In many cases the mid-size mills in Missouri and Kentucky specialized in specialty products such as handle blanks, turning squares, and staves. But Pennsylvania is unique in that a large number of these mills produced grade lumber that is collected and distributed by larger mills. However, it now appears that collection, distribution, and production cost structures have changed to where these mills are less competitive.

Conclusion

The hardwood sawmilling industry changed dramatically in the 1990s and has continued to change in the current decade. While each hardwood producing state has a different collection of sawmills, the market concentration of larger mills continues to increase in the states examined in this paper. This change may bode well for the market because it is much easier to increase the hours of operation for a large mill running under capacity than it is to restart closed mills or build new mid-size mills.

Since the early 1970s, the hardwood lumber industry has faced some horrific price cycles. The upward side



of the cycle was the result of increased demand for lumber and the inability of the sawmills to increase supply to meet demand. The downward side of the cycle was the result of reduced demand and the inability of small- and medium-sized sawmills to reduce production without going out of business and dumping their remaining lumber inventories. Not only does price variation make planning difficult, but it also has contrib-

uted to escalating stumpage prices by sending mixed long term profitability signals to the market. The fact that lumber prices have not plummeted in the last 4 years in the face of the largest decline in hardwood lumber demand since the Great Depression is, in part, the result of a maturing industry composed of large mills exercising greater control over their future.

Table 1 - Change in the number and average size of sawmills for selected states between the early 1990's and the early 2000's

State	Approximate number of sawmills producing more than 1 Million board feet annually			Average volume produced per mill (in million bf)		
	Early 1990's	Early 2000's	Percent change	Early 1990's	Early 2000's	Percent change
New York ¹	113	110	-2.6	4.04	4.62	14.2
Pennsylvania ²	276	285	3.2	3.15	3.96	25.6
West Virginia ³	118	101	-14.4	4.52	6.90	52.5
Kentucky ⁴	204	189	-7.2	4.28	4.94	15.2
Missouri ⁴	203	213	5.7	2.79	3.04	9.1
Indiana ⁵	127	100	-21.2	2.89	3.79	31.1
Michigan ⁶	131	96	-26.7	3.89	5.33	37.2

¹ Based on primary product directory data for years 1991 and 2001
² Based on primary product directory data for years 1991 and survey data for 2001
³ Based on primary product directory data for years 1990 and 2000
⁴ Based on primary product directory data for years 1991 and 2001
⁵ Based on primary product directory data for years 1992 and 2003
⁶ Based on primary product directory data for years 1990 and 2003

Figure 1 - Number of mills producing between 1 million and 4.9 million board feet annually by state for the early 2000's.

