

West Virginia's Forests

Growing West Virginia's Future

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Executive Summary

West Virginia, dominated by hardwood forests, is the third most heavily forested state in the nation. West Virginia's forests are increasing in volume and maturing, with 70 percent of timberland in the largest diameter size class. The wood products industry has been an engine of growth during the last 25 years when other major goods-producing industries were declining in the state. West Virginia's has the resources and is poised for even more growth in the future.

The economic impact of the wood products industry in West Virginia exceeds \$4 billion dollars annually. While this impact is large, it is not the only impact on the state from West Virginia's forests. Other forest-based activities generate billions of dollars of additional impacts. These activities include wildlife-associated recreation (hunting, fishing, wildlife watching), forest-related recreation (hiking, biking, sightseeing, etc.), and the gathering and selling of specialty forest products (ginseng, Christmas trees, nurseries, mushrooms, nuts, berries, etc.). West Virginia's forests also provide millions of dollars of benefits in improved air and water quality along with improved quality of life for West Virginia residents.

There is no doubt that West Virginia's forests are a critical link to West Virginia's future.

Introduction

West Virginia is the third most forested state in the United States. Forests cover 78.0 percent (12.0 millions acres) of the state's 15.4 millions acres of land. Almost all of the forested land (11.8 millions acres or 98.3 percent) is classified as commercial forestland, which is available for timber production.

Timberland accounts for a significant share of total county land for all West Virginia counties. Timberland shares range from 43.7 percent in Berkeley and Jefferson counties to 93.5 percent in Webster County. In 2000, over 88 percent of timberland in West Virginia was owned by private parties, including individuals, corporate businesses, farmers, and the forestry industry. Thus, forests are important to all counties in the state as a whole.

It is not surprising that West Virginia's economy is more specialized in wood products than is the nation. West Virginia is also more specialized in several other industries including mining, primary metals, stone-clay-and glass, and chemicals. Unfortunately, as Figure 1¹ shows, from 1980 to 2004 employment within most of these industries fell. The largest drop hit the mining industry where employment fell from 65.7 thousand in

¹ Data for 1980, 1990, and 2001 follow the 1987 Standard Industrial Classification system. Data for 2001N, 2003, and 2004 follow the 2002 North American Industrial Classification system. Differences in employment between 2001 and 2001N are due to changes in the way industries are now classified.

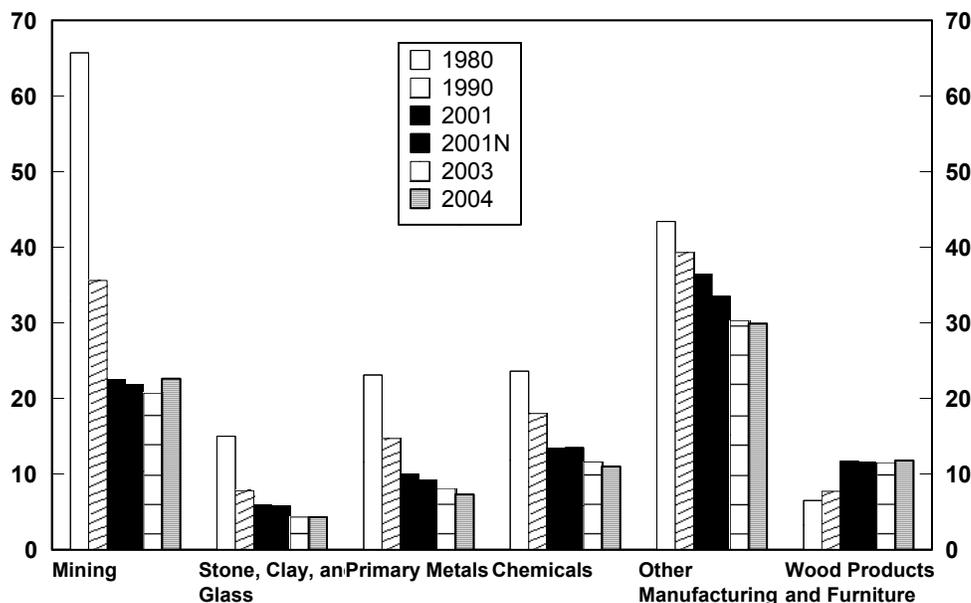
1980 to 35.6 thousand in 1990, and declined to 20.7 thousand in 2003 before rebounding to 22.6 thousand in 2004. Contrary to the trends in mining and non-wood manufacturing industries, employment in wood products and furniture industries rose from 6.5 thousand in 1980 to 11.8 thousand in 2004.

During the same period, the contribution of wood products and furniture industries to the state's GSP (gross state product) in private sectors also rose from 0.8 percent in 1980 to 1.1 percent in 1990, and went up further to 1.7 percent in 2001². Thus, despite the ongoing shift from goods producing industries to service producing industries, the role of the wood products industry in the West Virginia economy continues to grow and has the potential for even more growth in the future.

While statistically the wood products industry's contribution to the state's GSP is less than 2 percent, overall forest products are of much greater importance to the state's economy. The wood products industry is only one of many forest-based industries. Forests play a critical role in supporting other industries such as tourism, horticulture, and the Christmas tree industry. Forest industries have extensive inter-industry links within each county in the state. Forests are also the main instrument to preserve the quality of air and water in the state, which in turn facilitates people's daily activities. People can easily overlook some of forests' contributions because they are not easy to measure. This report analyzes the overall economic contribution of West Virginia forests to the state's economy.

² Data from U.S. Bureau of Economic Analysis

Figure 1
Employment in Selected West Virginia Industries
1980 to 2004



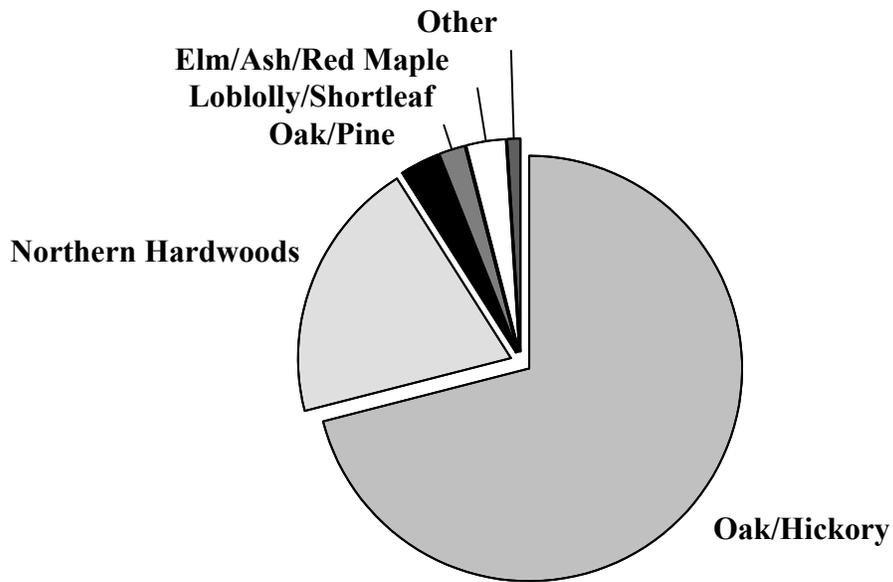
Source: West Virginia Bureau of Employment Programs, *Employment and Wages*

The Condition of West Virginia's Forests

West Virginia's most recent forest inventory and analysis, conducted in 2000, provides information on the condition of West Virginia's forests compared to earlier inventories. This information contributes to a thorough understanding of how West Virginia's forests are changing over time and what impacts that past uses of the forest are having on the state's forests.

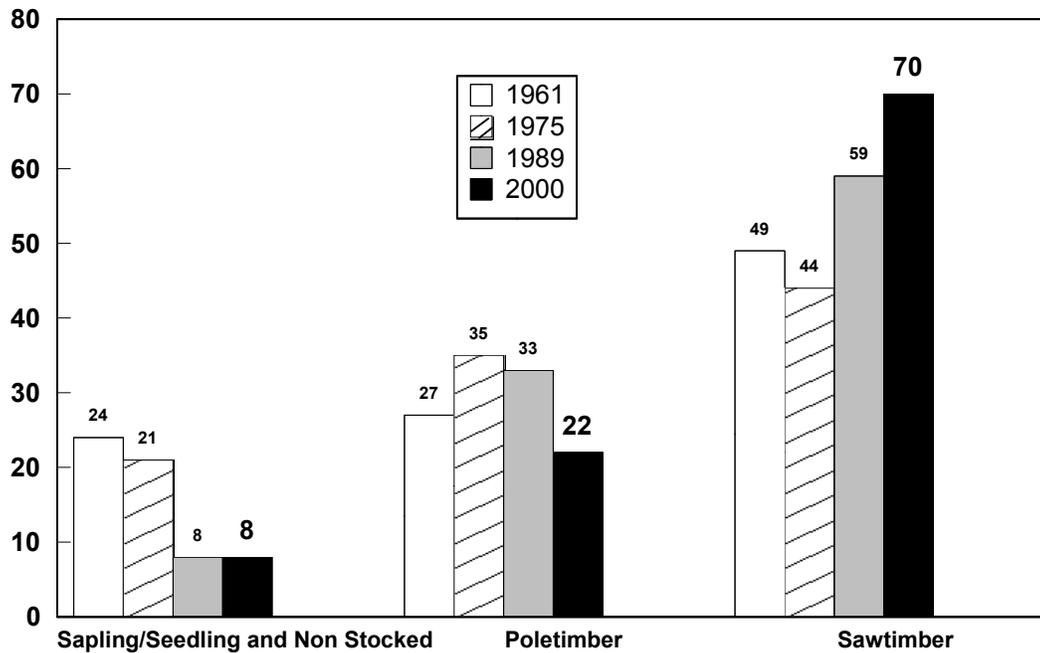
West Virginia is the third most forested state in the nation behind Maine and New Hampshire. West Virginia is the second leading hardwood state in the nation with 22.3 billion cubic feet of hardwood growing stock. Pennsylvania leads the nation with 22.6 billion cubic feet. As Figure 2 demonstrates, oak/hickory is by far the dominate forest type in West Virginia at 71 percent of total timberland. Northern hardwoods account for 20 percent of total timberland.

Figure 2
Timberland by Forest Type: 2000



Not only is West Virginia one of the most heavily forested states in the nation that is dominated by hardwoods, but through proper management of the forest resource West Virginia's forests continue to mature (Figure 3). Sawtimber size trees accounted for 70 percent of the state's timberland in 2000, up from 44 percent in 1975. Stocking of the state's timberland is also increasing. In 2000, 44 percent of the state's timberland was considered fully stocked, up from 30 percent in 1989. Average volumes per acre on timberland have also steadily increased over the last half century.

**Figure 3
Percentage of Timberland by Size Class**



While the most recent forest inventory and analysis for the state shows clearly that West Virginia’s forests are improving, there continue to be risks to the resource that demand proper management. While hardwoods dominate and continue to increase in the state, mortality is still a concern. On average, 138.5 million cubic feet of West Virginia hardwoods are lost due to mortality each year. Risks to the states forests come from a number of sources including, pests (beetles, gypsy moth, etc.), severe weather (ice storms, wind damage), and wildfires (most caused by human activities) to mention a few. Proper forest management to address these risks is critical to the prosperity of West Virginia’s forest-based industries.

The Current State of West Virginia Wood Products

West Virginia’s forests produce many benefits for the residents of the state. Timber is one of the main forest products. The harvesting of logs and the primary and secondary manufacturing of West Virginia wood products has been an engine of growth for the West Virginia economy. As Figure 1 demonstrates, many of the states traditional industries have suffered significant job losses since 1980, but the wood products and furniture industries buck that trend.

Wood products employment has surpassed employment in chemicals, primary metals, and stone, clay, and glass. Many of West Virginia’s traditional industries have experienced increase competition, both domestically and internationally. However, wood

products industries have maintained a relatively stable employment base or even experienced employment growth.

Figure 4, shows the employment³ in logging in West Virginia and the United States from 1990 through 2004⁴. While logging employment in the U.S. has declined since the mid-1990s, West Virginia continued to add logging jobs until 2000. Logging employment appears to decline in the state since 2000, but this reflects more of a move by many loggers to self-employment and thus out of the job data. Most of the employment estimates, including the data used in this report, do not capture self-employed individuals.

Figure 4
Employment in Logging
WV and US: 1990-2004

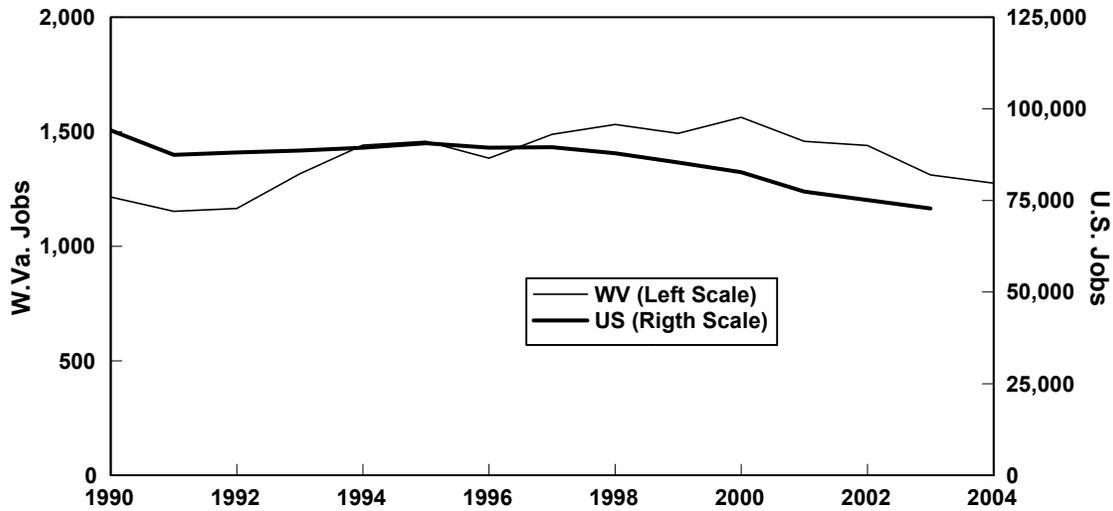
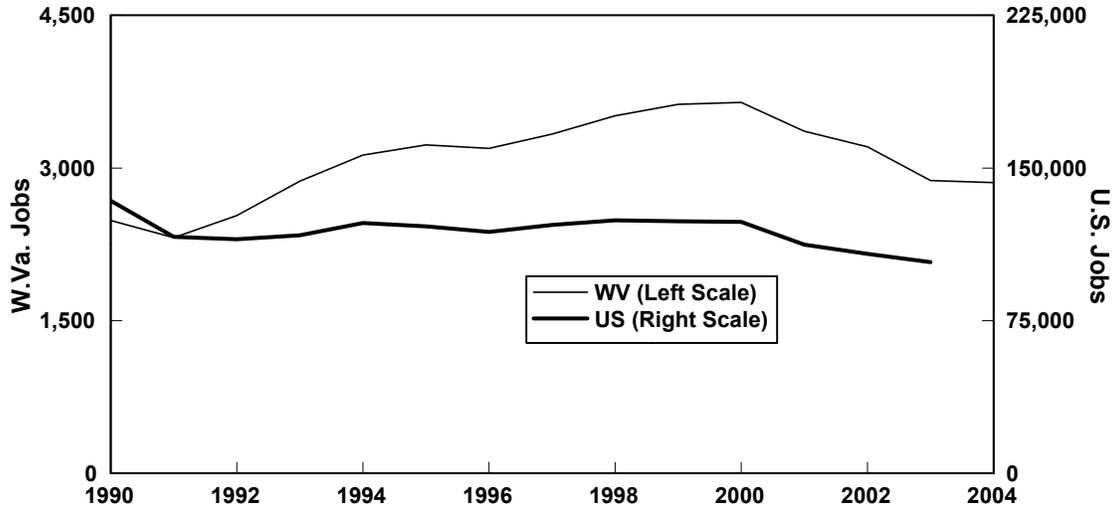


Figure 5, shows the employment in sawmills for both West Virginia and the United States from 1990 through 2004. Sawmill employment in West Virginia peaked in 2000 and has experienced moderate job losses through 2004. U.S. sawmill employment has fallen steadily since 1998, reflecting increasing competitive pressures.

³ Includes jobs covered by the unemployment compensation program. This employment is commonly referred to as covered employment or employment and wages. This does not include self-employed workers.

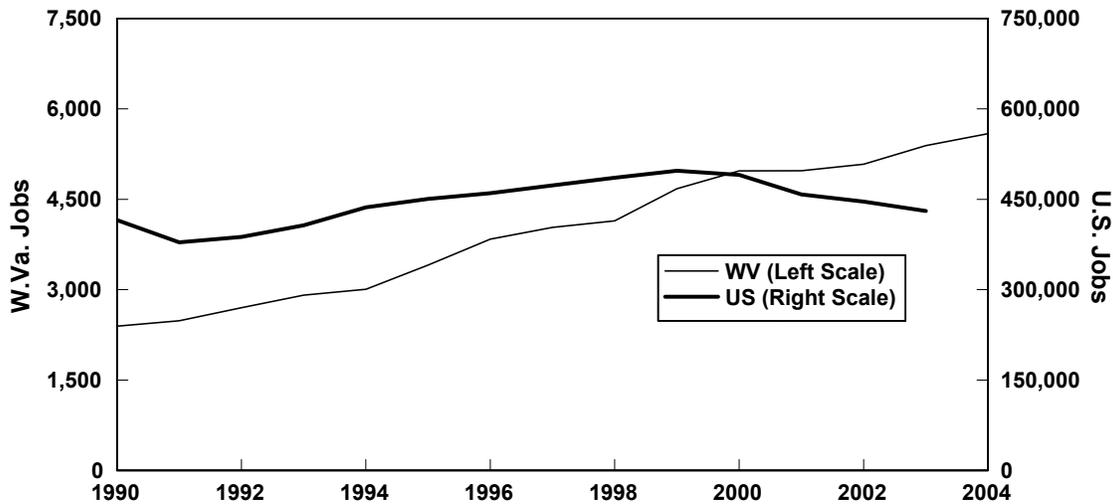
⁴ Data for 2004 for the United States was not yet available.

Figure 5
Employment in Sawmills
WV and US: 1990-2004



The two brightest spots in the wood products industries have been in assorted wood products manufacturing and furniture manufacturing (Figures 6 and 7). Employment in assorted wood products has exhibited strong growth since 1990, despite job losses in the U.S. since 1999.

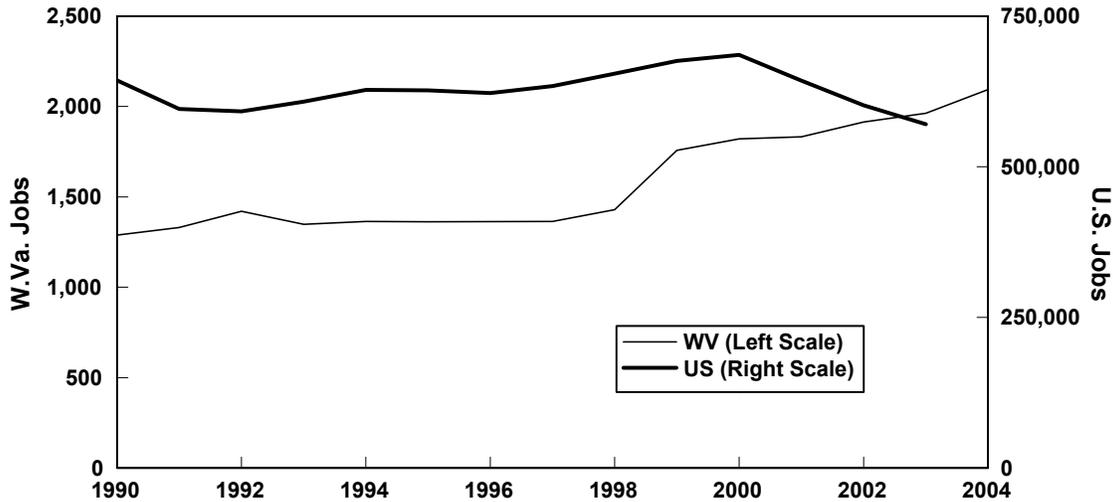
Figure 6
Employment in Assorted Wood Products
WV and US: 1990-2004



Similarly, employment in furniture manufacturing has been an engine of growth for the state. Jobs in furniture manufacturing remained stable throughout the early to mid-1990s.

The state, however, experienced strong growth since 1997, while the U.S. has suffered job losses in furniture manufacturing since 2000.

Figure 7
Employment in Furniture Manufacturing
WV and US: 1990-2004



Economic Impact of West Virginia Wood Products

Wood products job growth during the last 25 years, when other West Virginia industries were suffering significant job losses, coupled with the information from the most recent West Virginia Forest Inventory and Analysis provides further support that West Virginia’s wood products industries are poised for growth in future. In addition, the jobs in West Virginia’s wood products industries support many other jobs throughout the state. Wood products businesses buy goods and services from other industries, while employees of wood products firms spend significant portions of their incomes buying West Virginia goods and services. In turn, these businesses and their employees spend money in the state. These purchases create what is commonly referred to as the multiplier effect.

Utilizing information from surveys of wood products manufacturers along with publicly available data and the IMPLAN modeling software, the total economic impact of the wood products industry was estimated. Table 1 shows the direct, indirect and induced, and total economic impact of West Virginia’s wood products industry. West Virginia’s wood products industry contributes more than \$4 billion annually to the West Virginia economy. West Virginia’s wood products industry accounts for nearly 30,000 jobs across the state and pays in excess of \$703 million of employee compensation. All of this activity generates significant tax revenues for the state, including \$45.4 million in timber severance taxes, consumer sales taxes, personal income taxes, corporate net income taxes, and business franchise taxes.

West Virginia’s wood products industry is a major player in the West Virginia economy and, with continued efforts to manage the risks to the resource, has the ability to continue to prosper in the state.

Table 1
Economic Impact of Wood Products
West Virginia Economy

Type of Impact	Direct Impact	Indirect and Induced Impact	Total Impact
Business Volume (Sales)	2,032,861,000	1,982,027,000	4,014,888,000
Employment per Year (Jobs)	15,600	14,200	29,800
Employee Compensation	382,619,000	320,842,000	703,461,000
Assorted State Taxes	\$25,696,000	\$19,695,000	\$45,391,000

Notes: Employment is reported in average annual jobs. Totals may not sum due to rounding.
Assorted state taxes include consumer sales taxes, personal income taxes, corporate net income taxes, and business franchise taxes.

Forest-Related Values

West Virginia’s forests contribute to the West Virginia economy in many other ways besides the harvesting and processing of timber. Some of these contributions are easily quantifiable, while others are not. The following describes some of these benefits and, where possible, the economic impact associated with the activity.

Wildlife-Associated Recreation

Wildlife-associated recreation includes fishing, hunting, and wildlife-watching activities. In 2001, 843,000 participants in wildlife-related recreation in West Virginia spent about \$497 million and generated \$803 million in economic impacts for the state (Table 2).

Sportspersons (those who fished or hunted) spent about \$333 million while participants in wildlife-watching activities spent about \$164 million. There were 444,000 sportspersons and 605,000 wildlife-watching participants. These do not add to the total number of participants because individuals can be sportspersons and wildlife-watching participants at the same time⁵.

⁵ Economic impact data are derived from: American Sportfishing Association, “Sportfishing in America: Values of Our Traditional Pastime,” 2001; International Association of Fish and Wildlife Agencies, “Economic Importance of Hunting in America”, 2001; and Southwick and Associates, “The 2001 Economic Benefits of Watchable Wildlife Recreation in West Virginia”.

Table 2
Economic Impact of Wildlife Associated Recreation
West Virginia Economy

Activity	Retail Sales	Total Impact	Jobs	Selected State Taxes
Fishing	\$105,875,000	\$179,517,000	2,038	\$9,615,000
Hunting	\$227,593,000	\$366,386,000	3,818	\$16,382,000
Wildlife Watching	\$163,511,000	\$257,473,000	2,526	\$15,955,000
Total	\$496,979,000	\$803,377,000	8,382	\$41,952,000

Notes: Selected state taxes includes sales/fuel taxes and income taxes.

Forest-Related Recreation

The forest-related recreation and tourism sector is more difficult to define than the other forest-related sectors. This is because the attribution of recreation and tourism activities to use of the forest is not straightforward, and data that might directly link recreation and tourism to forest-based activities are not available.

According to a study by West Virginia Division of Tourism⁶, in 2001 the total economic impact of tourism in West Virginia amounted \$4.86 billion (Table 3). This figure includes direct spending by tourists in West Virginia of \$3.1 billion and tax revenues of \$187.1 million. The study shows that direct impact of tourists and travelers spending created 78,702 jobs, while indirect and induced impacts created 13,341 and 13,535 jobs, respectively.

Table 3
Economic Impact of Tourists and Travelers: 2001
West Virginia Economy

	Direct	Indirect	Induced	Total
Economic Impact (billions)	\$3.10	\$0.94	\$0.82	\$4.86
Employee Compensation (billions)	\$1.05	\$0.28	\$0.27	\$1.60
Employment	78,702	13,341	13,535	105,578

Although the annual report doesn't discriminate economic impact by activity, among the 22 million visitors the most popular activities are: sightseeing (20 percent), parks (17.8 percent), hiking/biking (15.5 percent), historic sites (10.1 percent), and hunting/fishing (8.6 percent). Most of these impacts directly or indirectly rely on West Virginia's forests.

Water Quality and Erosion Control

⁶ 2001 West Virginia Economic Impact of Tourists and Travelers.

West Virginia's forests play a crucial role in water quality and erosion control. West Virginia's forests reduce stream sedimentation and stabilize stream banks. The forests act as natural filters and reduce the need for treating water. The forests also improve the air that we breathe. While these impacts are difficult to measure, they provide significant benefits throughout the entire state.

Air Pollution and Carbon Dioxide Reduction

“Trees are the cheapest and most efficient way to sequester and store carbon from the atmosphere, which reduces the impact from burning fossil fuels.”⁷ West Virginia's trees store 376.6 million metric tons of carbon⁸ and this continues to rise. This is equivalent to removing over 1.3 billion metric tons of carbon dioxide for the air. With the volume of wood continuing to increase carbon dioxide removal is increasing each year with a value worth millions of dollars to the state.

West Virginia's forests also help reduce other pollutants as well, including carbon monoxide, sulfur dioxide, nitrogen dioxide, ozone, and particulate matter.⁵ While the value of these benefits is difficult to estimate, other studies indicate that the value to the state of West Virginia is in the millions, if not billions, of dollars.

Improved Quality of Life

West Virginia's forests also contribute to the overall quality of life in the region. “Several studies have indicated that forested neighborhoods have reduced energy costs, less crime, less pollution, and higher ‘quality of life’ compared to similar communities without trees.”⁵ West Virginia's forests contribute to the states scenic beauty and have made West Virginia one of the nation's fastest growing states in second homes. Many people looking for a location for a second home have chosen West Virginia. West Virginia's forests play a crucial role in attracting those seasonal homes.

Specialty Forest Products

Non-wood Forest Products (NWFPs), as defined by the Forest Products and Economics Division of The Food and Agriculture Organization of the United Nations, are products of biological origin other than wood derived from forests, other wooded land, and trees outside forests. NWFPs may be gathered from the wild or produced in forest plantations.

NWFPs are also known as non-timber, minor, secondary, and special or specialty forest products. The impact of these specialty forest products is difficult to obtain. Many of these products are gathered for personal consumption or data is not readily available on

⁷ Virginia's Forests: Our Common Wealth, 2001, Virginia Department of Forestry

⁸ Carbon in U.S. Forests and Wood Products, 1987-1997: State-by-State Estimates, U.S. Department of Agriculture, Forest Service

quantities gathered or prices paid. Some of the specialty forest products include: Christmas trees, medicinal plants, mosses, barks, maple syrup, forest tree nursery products, tree nuts, berries, mushrooms, and much more. The following summarizes a few of the major specialty forest products.

Medicinal Plants (including Ginseng)

There are numerous medicinal plants gathered and traded in West Virginia. These include: ginseng, goldenseal, star grub, Virginia snake root, bloodroot, mayapple, and sassafras, to name a few. Ginseng, a native plant of West Virginia, grows in all 55 counties of the state and is the most popular of all medicinal plants gathered due to the high price that can be obtained for the root. Its collection is regulated by state law. Each year ginseng roots are dug between August 15 and November 30.

In West Virginia, ginseng has been harvested as a cash crop for more than 100 years and contributes an average of approximately \$3 to \$4 million to the State's economy annually (diggers and dealers combined). Recent data from the West Virginia Division of Forestry show that in 2002, ginseng harvest totaled 5,200 pounds of wild root and 1,200 pounds of woods grown, wild simulated, and cultivated root.⁹

Clements State Tree Nursery

The DOF operates the State's only forest tree nursery at West Columbia, north of Pt. Pleasant on the Ohio River. The nursery produces and offers for sale over 30 different tree species, including hardwoods such as oak, locust, yellow poplar, sycamore, ash, black cherry, walnut, butternut, hickory and chestnut. The softwoods, or conifers, include several varieties of pines, spruce, larch and fir.

Nursery tree sales again totaled over 1.4 million seedlings during the year. The trees were planted for cover, reforestation, erosion control, Christmas trees, wildlife plantings and windbreaks. Much of the seed grown at the nursery comes from within the state. The nursery routinely purchases oak, chestnut, poplar, walnut, butternut, and hickory seed from West Virginia landowners.

Christmas Tree Industry

Access to data on sales or statistics about this industry is rather difficult. In an interview to AP on February 2002, Bob Whipkey, a West Virginia State Forester affirmed that the Christmas tree industry in West Virginia is a \$3 million dollar a year industry. Results from the 2002 Census of Agriculture show that 60,098 Christmas trees were cut in West Virginia adding up to a total sales value of \$1,182,000. These numbers do not include to-be-cut Christmas trees.

Other Specialty Forest Products

⁹ West Virginia Division of Forestry, 2003 Annual Report.

There are many other specialty forest products that contribute to the West Virginia economy. Fruits, tree nuts, and berries directly contribute \$11.4 million annually to the West Virginia economy. Apple orchards dominate with nearly \$7.2 million in sales annually. Nursery and tree production also provides significant revenues each year, contributing \$8.6 million in 2002.

Conclusion

West Virginia's forests are increasing in volume and maturing, with 70 percent of timberland in the largest diameter size class. The wood products industry has been an engine of growth during the last 25 years when other major goods-producing industries were declining in the state.

The impact of the wood products industry exceeds \$4 billion dollars annually. **Value of other forest values.** While this impact is large, it is not the only impact on the state from West Virginia's forests. Other forest-based activities generate billions of dollars of additional impacts. These activities include wildlife-associated recreation (hunting, fishing, wildlife watching), forest-related recreation (hiking, biking, sightseeing, etc.), and the gathering and selling of specialty forest products (ginseng, Christmas trees, nurseries, mushrooms, nuts, berries, etc.). West Virginia's forests also provide millions of dollars of benefits in improved air and water quality along with improved quality of life.

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