

The Economic Importance and Wood Flows from New York's Forests, 2007*

North East *State* Foresters Association



From Long Island, to Buffalo, to Plattsburgh, the trees and forests of New York provide New Yorker's and visitors alike with multiple values and amenities. These range from easily recognizable and measurable economic and recreational benefits, to benefits known as "ecological services", such as clean air, clean water, biological diversity, temperature moderation, and carbon sequestration. While New York is currently 61% forested, just 80 years ago the state contained only half this area of forest. New York has benefited immensely from this unprecedented and dramatic reforestation, while at the same time maintaining a diversity of landscape amenities such as farms, water, and other open spaces. In recent decades, economic benefits in all corners of the state have grown because the forests have grown. The increased forest supports a critically important wood products industry, as well as an increasingly active population looking for more and more recreational opportunities. This report, "The Economic Importance and Wood Flows from New York's Forests" provides a brief overview of the vast importance of one of New York's most important assets.

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This booklet is part of a series on the economic importance and value of forest-based manufacturing and forest-related recreation and tourism of the four states in the NEFA region – New York, Vermont, New Hampshire and Maine. A regional report, and the individual state reports, are also available online at www.nefainfo.org. The reports include an overview of the land base in each state and a summary of federal and state data from 2005 or newer that provide a picture of the forest-based manufacturing and forest-related recreation and tourism sectors of the economy.

The reports do not include indirect or induced multipliers, so all data provided represent direct contributions to the economy. The reports update a similar series produced by NEFA in 1995, 2001 and 2004. Different data sources and methods to calculate values were used for the 1995 and 2001 reports, so values from the current reports can only legitimately be compared to the 2004 reports. The economic benefits associated with forest values such as clean water, soil stabilization and regional green space, among others, are not included in this report, so the final values are very conservative.

* Published August, 2007 using 2005 or better data.

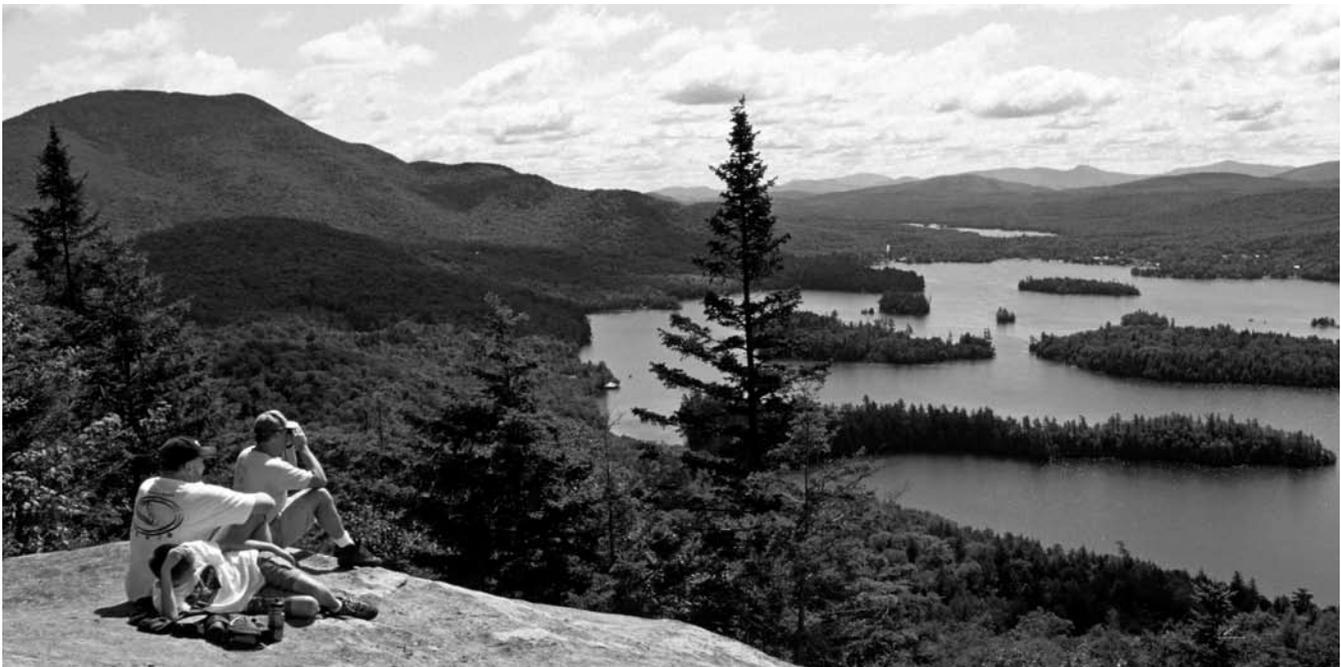


Highlights

- The annual contribution of forest-based manufacturing and forest-related recreation and tourism to the New York economy is over **\$8.8 billion**.
- Forest-based manufacturing contributes **\$6.9 billion in value of shipments** to the economy in 2005 or **4.5%** of New York's total manufacturing sales.
- The forest-based manufacturing industry and forestry and logging provides employment for 57,202 people and generates a payroll of over **\$2.1 billion**.
- Forest-based recreation and tourism provides employment for over 14,600 and generates payrolls of **\$300 million**.
- Revenues from forest-related recreation and tourism activities totaled **\$1.9 billion** in 2005.
- New York landowners received estimated stumpage revenue in 2005 of over **\$300 million**.
- The sale of Christmas trees, wreaths and maple syrup contributed approximately **\$25 million** in 2005.
- Each 1,000 acres of forest land in New York supports 3.0 forest-based manufacturing, forestry and logging jobs and .8 forest-related tourism and recreation jobs.

Table 1. ANNUAL REVENUES FROM NEW YORK'S FORESTS

	Total values and per forested acre basis	
	Millions of \$	\$ per acre
Forest-based manufacturing value of shipments	\$6,911	\$374
Forest-related recreation and tourism	1,877	102
Christmas trees/maple products	25	1.3
Totals	\$8,813 million	477.3



The Forest Resource in New York

New York's land area is 30.22 million acres. Sixty-one percent or 18.46 million acres, is forested. The USDA Forest Service classifies 15.78 million acres of forestland as timberland or land that is fertile enough to produce wood as a crop and is not withdrawn from timber harvesting by statute or regulation (table 2).

The majority of timberland in New York is privately owned (14.0 million acres or 90.2%) by business concerns or family forest owners. Local, State and Federal government owns just under 10% or 1.68 million acres of New York's timberland (see figure 1).

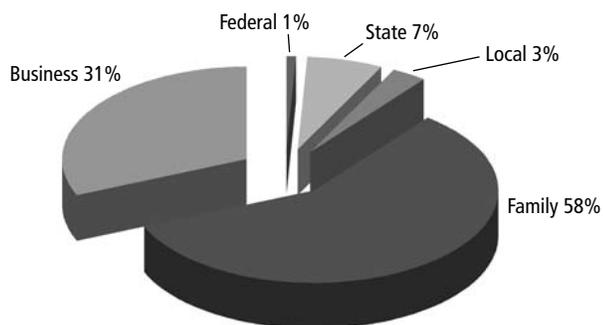
Table 2. TOTAL LAND AREA, FOREST LAND ACRES, AND TIMBERLAND ACRES, NEW YORK, 2005

Total land area	Forest land	Timberland (subset of Forest land)
30,216,742	18,464,222	15,781,242

Source: USDA Forest Service, Forest Inventory & Analysis, 2005

Figure 1. TIMBERLAND OWNERSHIP, NEW YORK, 2005

Source: USDA Forest Service, Forest Inventory & Analysis, 2005



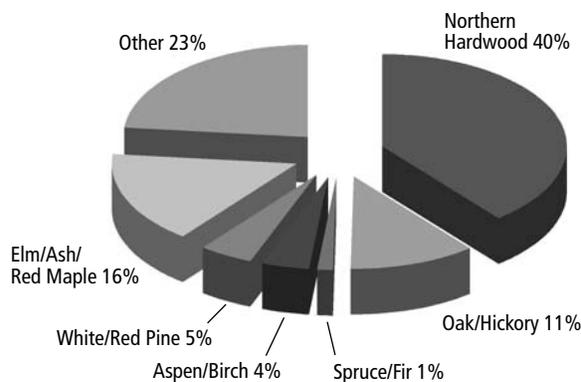
Forest types are areas of forest where certain tree species grow in association with one another due to similar growing requirements. The northern hardwood forest type is the most common in New York (figure 2) and covers 6.1 million acres (39%), followed by the oak/hickory, elm/ash/red maple and other types.

NEW YORK'S FOREST INDUSTRY

New York's forest products industry is as diverse as any of the states in the Northern Forest region, with businesses ranging from pulp and paper mills, sawmills, engineered panel plants, biomass energy plants, secondary manufacturing in the furniture and related business as well as the logging and trucking contractors who deliver the raw materials to market. As every year passes, however, challenges mount and those in the industry who continue to do well are not

Figure 2. FOREST TYPES, NEW YORK, 2005

Source: USDA Forest Service, Forest Inventory & Analysis, 2005



fearful of trying new methods, investing in the latest equipment and seeking out the best employees. Challenges being experienced by all sectors result from global competition, high energy costs, and high insurance costs, among other factors.

Despite this, the forest products industry continues to produce at near record high levels as compared with historic production highs in the 20th century. Investment in the latest technology in existing forest products manufacturing sectors as well as exploring new products such as biofuels, are key avenues to a successful future for this industry. New York has several prospective new generation biofuels production facilities in the planning or development stages as this publication goes to print.

Forest-based Manufacturing

New York's forest-based manufacturing system consists of:

- timber harvesting and associated trucking,
- primary manufacturing and
- secondary manufacturing.

Large and small operations in the timber harvesting sector cut the trees down and market the logs and other products to many markets in New York and elsewhere. Sawlogs will be trucked to sawmills and highest value logs may be shipped to veneer mills that take thin layers from the log in sheets (or peel them like an apple peeler) to produce veneers that go into many uses. Pulpwood is used by pulp mills to manufacture pulp used in paper manufacturing. The wood energy industry takes whole tree wood chips or residues such as chips and sawdust from sawmills and burns the wood material in a boiler to produce steam and then electricity. Sometimes the steam is used for other manufacturing processes such as dry kilns or greenhouses or other steam users. Some products are shipped out-of-state for further processing.

This report includes several economic indicators and metrics

on forest-based manufacturing that are provided by the federal government. Employment and payroll data are taken from the US Department of Commerce, Bureau of Economic Analysis, Regional Economic Accounts, 2005. Value-added contributions and the value of shipments are provided by the US Bureau of Census, Annual Survey of Manufacturers, 2006 (2005 data).

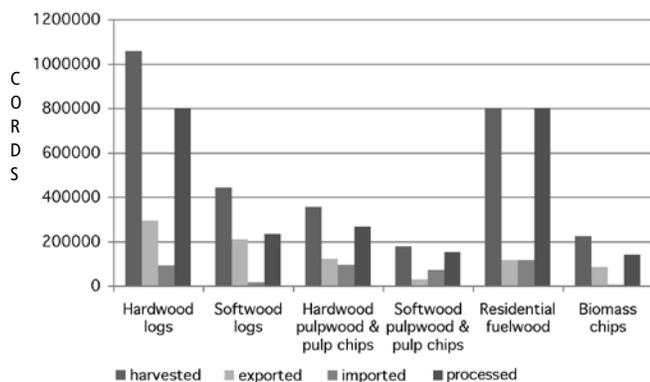
PRIMARY MANUFACTURING

The conversion of trees or parts of trees, into lumber, veneer, pulp and paper or energy starts with the primary manufacturing sectors. In New York, where the pulp and paper industry once used the majority of the wood harvested, the sawmill and wood energy industries now increasingly are the major wood users. The state also has approximately 125 substantial sized sawmills and additional specialty wood products mills. The wood energy sector has seen a renewed resurgence as fossil fuel prices have skyrocketed. The state has two stand-alone wood energy plants and a soon to be operating wood pellet manufacturing facility. Wood-fired energy production is, once again, economically feasible and popular given its renewable source. More plants are likely to be built in the state in the next five years. Bio-fuels production from wood cellulose will likely see production begin in New York in the next several years as New York and the nation seek alternatives to foreign oil for transportation fuels.

Timber Harvesting & Wood Flows

In 2005, 538 million board feet¹ (International scale²) of hardwood logs and 218.0 million board feet of softwood logs were harvested from the forests of New York. In that same year, 900,000 green tons³ of hardwood pulpwood and pulp chips⁴ and 450,000 green tons of softwood pulpwood and pulp chips were harvested in the State. Over 550,000 green tons of whole tree chips⁵ were harvested in 2005 as well. The estimated value of these harvested volumes to landowners in stumpage⁶ exceeds \$300 million. Figure 3 shows the flows of wood from the major categories of wood harvested – all calibrated in cords for easy comparison.

Figure 3. WOOD FLOWS IN NEW YORK, 2005



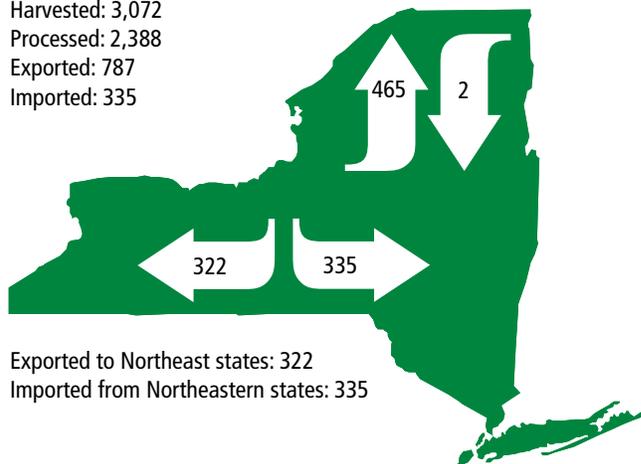
New York 2005

All units are in 1000 cords

Exported to Canada: 465

Imported from Canada: 2

Harvested: 3,072
Processed: 2,388
Exported: 787
Imported: 335



Exported to Northeast states: 322

Imported from Northeastern states: 335

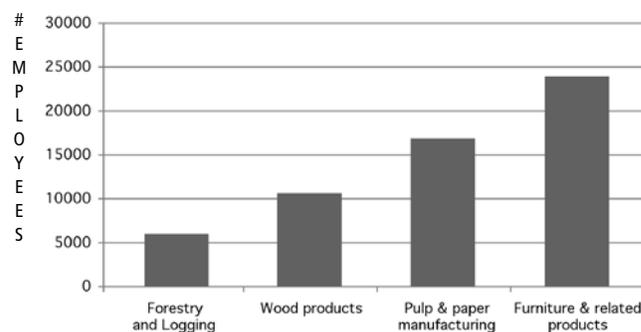
The map that is part of Figure 3 shows the flows graphically.

Employment and Production

The US Department Labor and Census reported 5,923 individuals employed in the forestry and logging sector in New York in 2005 (figure 4). Employment in wood products was just over 10,596 while pulp and paper was approximately 16,814⁷. Furniture and related products employed 23,869⁸.

Figure 4. EMPLOYMENT IN FOREST-BASED MANUFACTURING, NEW YORK, 2005

Source: US Dept. of Commerce, Bureau of Economic Analysis, 2005 & US Dept. of Labor, 2005



- 1 Board foot equals a solid piece of wood 1 inch thick by 12 inches wide by 12 inches long
- 2 A standard for measuring wood in board feet – commonly used in the Northeastern U.S.
- 3 Green ton – weight in tons (1 ton=2000 pounds) of pulpwood or wood chips harvested from live trees – contains substantial amounts of water weight hence “green”
- 4 Pulp chips are clean wood chips devoid of bark and twigs

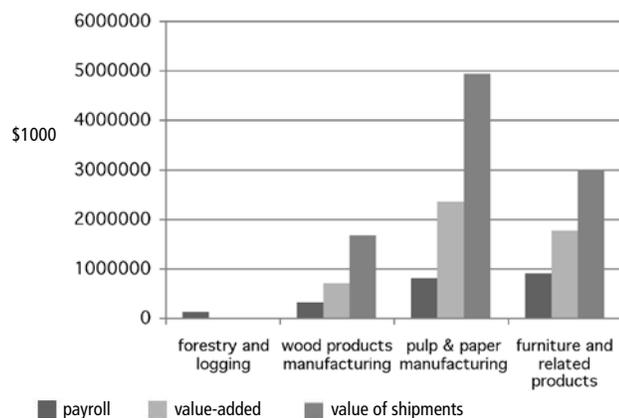
- 5 Whole tree chips include tops, branches, twigs and bark
- 6 Stumpage – value landowners receive for their trees when they are sold in a timber sale.
- 7 This includes some paper manufacturing facilities using market pulp from non-New York pulp mills.
- 8 This includes some furniture manufacturing (approximately 10-15%) that is not wood related.

Figure 5 shows payroll, value added and value of product shipments for New York's forest products industry. All figures are from 2005 data. Payroll for forestry and logging was \$109,554,000. Payroll in the wood products sector (includes sawmills, wood energy and secondary solid wood manufacturing) was \$312,377,000, while in pulp and paper \$795,379,000, and \$894,760,000 for furniture and related products.

Further review of Figure 5 occurs in sections that follow.

Figure 5. PAYROLL, VALUE-ADDED AND VALUE OF SHIPMENTS FOR FOREST-BASED MANUFACTURING INDUSTRIES, NEW YORK, 2005

Sources: US Dept of Commerce, Bureau of Economic Analysis, 2006



Forestry and Logging Sector

The logging industry is an important source of employment in New York. Over 3,500 loggers have participated in the voluntary certification program that promotes safety and environmental awareness through New York Logger Training since 1996. More loggers are employed than those participating in the logger certification program. The Department of Commerce reports over 3,700 employed in 2005 in forestry and logging.

Production of Lumber and Related Solid Wood Products

In 2005, sawmills in New York processed 438 million board feet of hardwood logs and 120 million board feet of softwood logs into lumber and related solid wood products (figure 3). The total value added for wood products manufacturing which also includes wood preservation, millwork, wood container and pallet manufacturing, and prefabricated wood buildings (figure 4) was \$695.5 million and the value of shipments was \$1.66 billion (figure 5).

Pulp and Paper Manufacturing

New York and Maine have the only operating pulp and paper plants in the NEFA region. The two mills in New

York along with many other paper mills (stand-alone paper plants with no pulp mills on site) provide total value added for pulp and paper manufacturing at \$2.34 billion while the value of shipments was \$4.93 billion (figure 5).

Wood Energy

Wood fiber and bark burned for energy are referred to as biomass fuel and come from three sources: tree tops and low quality stems of harvested trees (whole tree chips) which come from forestry harvests, land clearing or development and, sawmill/secondary wood manufacturing residue. Other minor sources of wood for energy may also come from storm damaged trees/urban wood waste and used pallets, railroad ties and other used manufactured wood. Since the 1980s, there have been two 20 megawatt (approximate) electric generating facilities in New York that utilize strictly biomass for fuel, and approximately 100 other facilities with relatively small wood burning processes. In 2005, 550,000 green tons of whole tree fuel chips were harvested from New York's forests. This volume was utilized primarily by biomass energy facilities in New York and Vermont, with minor volumes consumed by pulp mills as boiler feedstock.

A new wood pellet manufacturing facility is scheduled to begin operation in 2007. This plant will produce pellets for the growing residential heating market. This plant is expected to use both sawmill residues and whole tree chips. Other biomass to energy facilities are expected to be developed in New York in the next few years as conventional wood energy and new bio-fuels (transportation fuels) plants are built through government incentives and the result of high fossil fuel prices and the interest in energy security increases.

Residential firewood data has not been collected for New York since the mid-1990s. At that time it was estimated that over 800,000 cords of firewood was harvested and processed in New York, contributing \$100 million to the economy. Experts believe that current harvest and use levels are at least at mid-1990s levels.

SECONDARY MANUFACTURING

Secondary manufacturing refers to the drying, planing, cutting and assembly of lumber into parts or finished products. A diversity of trees growing in New York contributes to a stable secondary industry, composed of approximately 1,000 dispersed companies that provide jobs and economic stability to the communities within which they sit. In New York, besides kitchen cabinets and furniture, baseball bats, log homes, cable and wire spools, pallets and many other products are manufactured from the varied hardwood and softwood tree species available.



Furniture and Related Products

Furniture and related products, a category of manufacturing that includes wood kitchen cabinet and countertop manufacturing, non-upholstered wood household furniture manufacturing and custom architectural woodwork and millwork manufacturing. In 2005, over 23,000 individuals were employed in this sector (figure 4), with a payroll of \$894.8 million. The total value added for furniture & related products was \$1.76 billion and the value of shipments was \$2.99 billion (figure 5).

ASSOCIATED FOREST PRODUCTS

Sales of maple products in 2005 totaled \$7.0 million. Estimated sales of Christmas trees and wreaths totaled \$17.9 million.

THE POSITION OF FOREST-BASED MANUFACTURING IN THE NEW YORK ECONOMY

Table 3 provides a comparison of the forest-based manufacturing sector with the total manufacturing sector in New York.

Table 3. GROSS STATE PRODUCT, FOREST-BASED MANUFACTURING, NEW YORK, 2005

	millions of \$
Wood products manufacturing	\$695
Furniture and related product manufacturing	\$1,761
Paper manufacturing	\$2,342
	Total \$4,799
GSP, Manufacturing, New York	\$87,756
GSP, Total for New York	\$957,873

Table 4 provides a comparison of the forest-based manufacturing sector (excluding forestry and logging) with the total manufacturing sector in New York. Forest-based manufacturing provides 8.7% of the manufacturing payroll and employs 9.4% of manufacturing employees. This sector provides 5.5% of value added receipts in manufacturing and 4.5% of value of shipments receipts.

Table 4 FOREST-BASED MANUFACTURING AND OTHER MANUFACTURING INDUSTRIES, NEW YORK, 2005

	# employees	% of manufacturing employees	Payroll (\$1000)	% of manufacturing payroll	Value added (\$1000)	% value added all manufacturing	Value of shipments (\$1000)	% of value of shipments all manufacturers
Forest-based manufacturing	51,279	9.4%	2,112,070	8.7%	4,798,776	5.5%	6,910,846	4.5%
All manufacturing	547,190		24,208,127		87,756,129		154,681,964	

Source: US Department of Commerce, Bureau of Economic Analysis, 2005 & Annual Survey of Manufactures, November 2006 US Department of Commerce (2005 data)

Forest-Related Recreation and Tourism

In New York, many recreation and tourism activities are linked to the forest, but it is difficult to estimate the specific contribution made by the forest environment towards recreation and tourism expenditures. The recreation activities selected for this report use the same methodology as those used in our similar report in 2004. The activities that take place primarily in a forest environment include camping, hiking, hunting, downhill skiing, cross-country skiing, snowmobiling, fall foliage viewing and wildlife viewing. Attributing 100% of the economic contribution of these activities to forests is an overstatement, but 50% is an understatement. In his analysis for this report, Dr. Hugh Canham assumed three-quarters (75%) of each activity would not take place if there were no forests. That percentage was raised to 100% for fall foliage viewing.

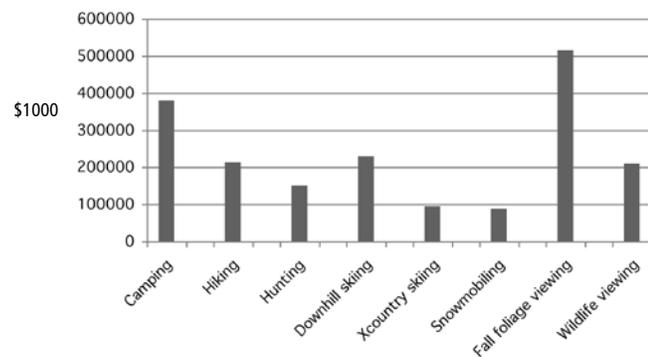
Estimates of number of visitor, or participant, days engaged in for each selected recreation activity were drawn from the latest National Survey on Recreation and the Environment (NSRE, 2004) and by updating data from the 2004 NEFA reports. For camping and hiking, the average number of visitor days per visit for the North region in the NSRE were used. These were updated to 2005 by the percent increase in population as determined from U.S. Census projections (US Bureau of the Census). For downhill skiing, cross country skiing, sightseeing (fall foliage viewing) and snowmobiling, the numbers used in the 2000 study (which were 1997 data) were updated using trend increases contained in the NSRE for 2000 and extrapolated to 2005 assuming the trends between 1994 and 2001 would hold through 2005. Statewide Comprehensive Outdoor Recreation Plans (SCORP) for each state were used for the 2001 NEFA reports, but these are no longer available. Expenditure data per participant-day were updated using the Consumer Price Index (US Bureau of Labor Statistics). (The factor for converting 1997 prices to 2005 prices is 1.24.) There were no direct number of visitor-days developed for hunting and wildlife viewing. Instead, direct estimates of expenditures were taken from the National Survey of Fishing, Hunting and Wildlife-Related Activities (US Dept. of Interior, 2004).

Estimates of impacts on employment and payroll were developed from ratios of employment or payroll to sales based on data for these in the 1997 Economic Census of the U.S. Bureau of the Census following procedures used in the 2000 report. Employment impacts were calculated by first taking estimated 2005 sales and deflating them back to the 1997 datum then applying the calculated ratio of sales to employment. For payroll, the estimate of sales to payroll was applied directly to the 2005 sales results. The rationale for this is that employment does not increase due to nominal dollar increases but rather will increase due to real (deflated) dollar output increases.

The recreation activities included in this report contribute \$2.48 billion dollars in sales to the New York economy. The portion attributed to the forest resource is \$1.88 billion dollars. These are distributed among purchases at food and beverage stores, automobile gasoline service stations, accommodations (lodging places), eating and drinking establishments and a host of other retail trade or service sectors. Fall foliage viewing is the largest contributor with over half of the total sales, and wildlife viewing is second (figure 6). About 14,600 people are directly employed with payrolls of \$300 million due to forest-related recreation in New York.

Figure 6. FOREST-RELATED RECREATION AND TOURISM EXPENDITURES, NEW YORK, 2006

Source: NEFA, 2006



SOURCES OF DATA

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NORTH EAST STATE FORESTERS ASSOCIATION (NEFA) NEFA'S MISSION

Encourage sound decisions about the management and use of rural and urban forest resources in the NEFA region by: developing quality data and information about the forests of the region, identifying significant regional trends, assist the states in broadening awareness of forest health and sustainability issues, providing a regional context for state and local decisions about forest resources and analyzing the environmental, social and economic impacts of forest land use.

This series of reports, as well as other NEFA publications, and additional information about NEFA can be found at www.nefainfo.org. NEFA is the State Foresters of New York, Vermont, New Hampshire and Maine cooperating with the US Forest Service, State and Private Forestry.



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