



**JUST THE FACTS:**  
***THE PAST, PRESENT & FUTURE***  
***OF NEW YORK'S***  
***FOREST & FOREST PRODUCTS***

# WHY THE WOODS AND FORESTS OF NEW YORK ARE IMPORTANT TO YOU



From Plattsburgh to the southern tip of Staten Island, from the eastern end of Long Island to Buffalo and all places in between, the trees, woods, and forests of New York touch every person every day. The 18.7 million acres of woods and forests that span across the state, together with street and backyard trees in our cities and villages sustain all of the 18 million people that live and work in our great Empire State.

“ *If left untouched, trees are the natural cover that will cover any land in New York if nothing else is there such as farm fields, lawns, roads, or buildings.* ”

Indeed, if it were not for humans all of New York State would be covered with trees. Instead, today in the 21st Century, about 65% of the state is in woods and trees. These areas are comprised of lots from an acre or more in some ones back yard to privately owned tracts of 50 or 100 acres anywhere across the state to the larger forests held by either private individuals, the forest industry, or in public ownership. However, almost three-quarters of all woods and forests in New York are in private ownerships averaging 50 acres in any separate ownership. This adds

up to about 700,000 different owners that affect your every-day life.

As you drive up and down the state, marvel at the fall foliage, take a drink from your kitchen tap, hunt in your favorite woodlot, use a paper product, play at your piano, or have a fancy meal at the dining room table, the actions of owners of New York's woods and forests have made that possible. Along with the owners of our forests are the loggers who sustainably harvest mature trees; the wood-using industries that produce lumber, paper, pianos, furniture, flooring, and a host of other products; professional foresters who insure that we will have high quality forests for the future; and others who strive to educate forest owners and the public about the importance of good stewardship and responsible management of our precious legacy. **For if we are to have pure water in the future, good wildlife habitat, and a thriving rural and urban economy we cannot just leave the woods and forests to their own devices.** Only careful sustainable management can ensure, in a state like New York, that this precious renewable legacy continues for our children and grandchildren, regardless of where you live in New York or what your interest is. The Empire Forests do indeed reach into our lives every day.

# FOREST LAND

The forests that extend across New York State are rich in species diversity, are owned by a multitude of different people, and are constantly changing as trees grow, owners change, and other land uses occupy or cease to use the land.

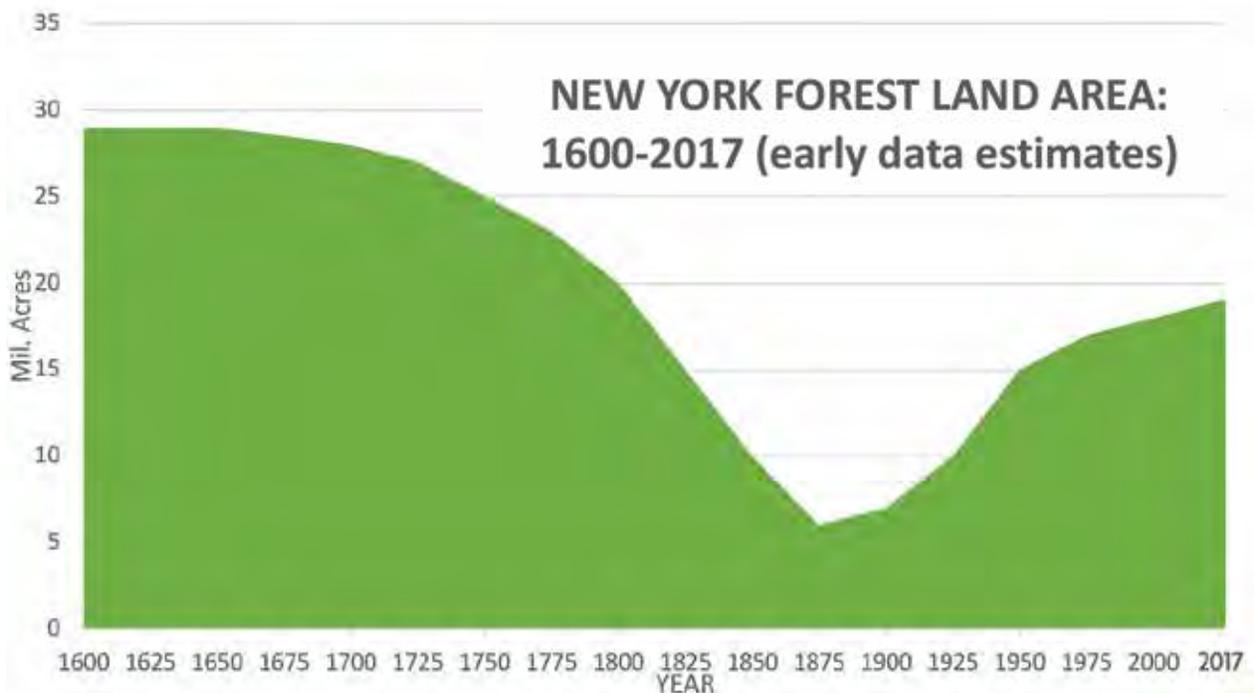
Without human intervention virtually all of New York would be covered with trees. This was the scene at the beginning of European settlement in the early 1700s. Forests were removed for farming across much of the state. By the beginning of the 1900s only 20% of the state was forested. Then, farming concentrated on just the better and more accessible land. Forests quickly returned since trees are the natural land cover in our humid northeastern United States. Today forests cover 65% of New York State, just under 19 million acres. Woods and forests are the most wide-spread land cover in the state. The most recent data for 2017 shows a slight decrease in forest land. This is due partly to a loss of some areas to non-forest uses and a slight change in the definition of forest land by the U.S. Forest Service. However, this slight change does not signify a trend for now.

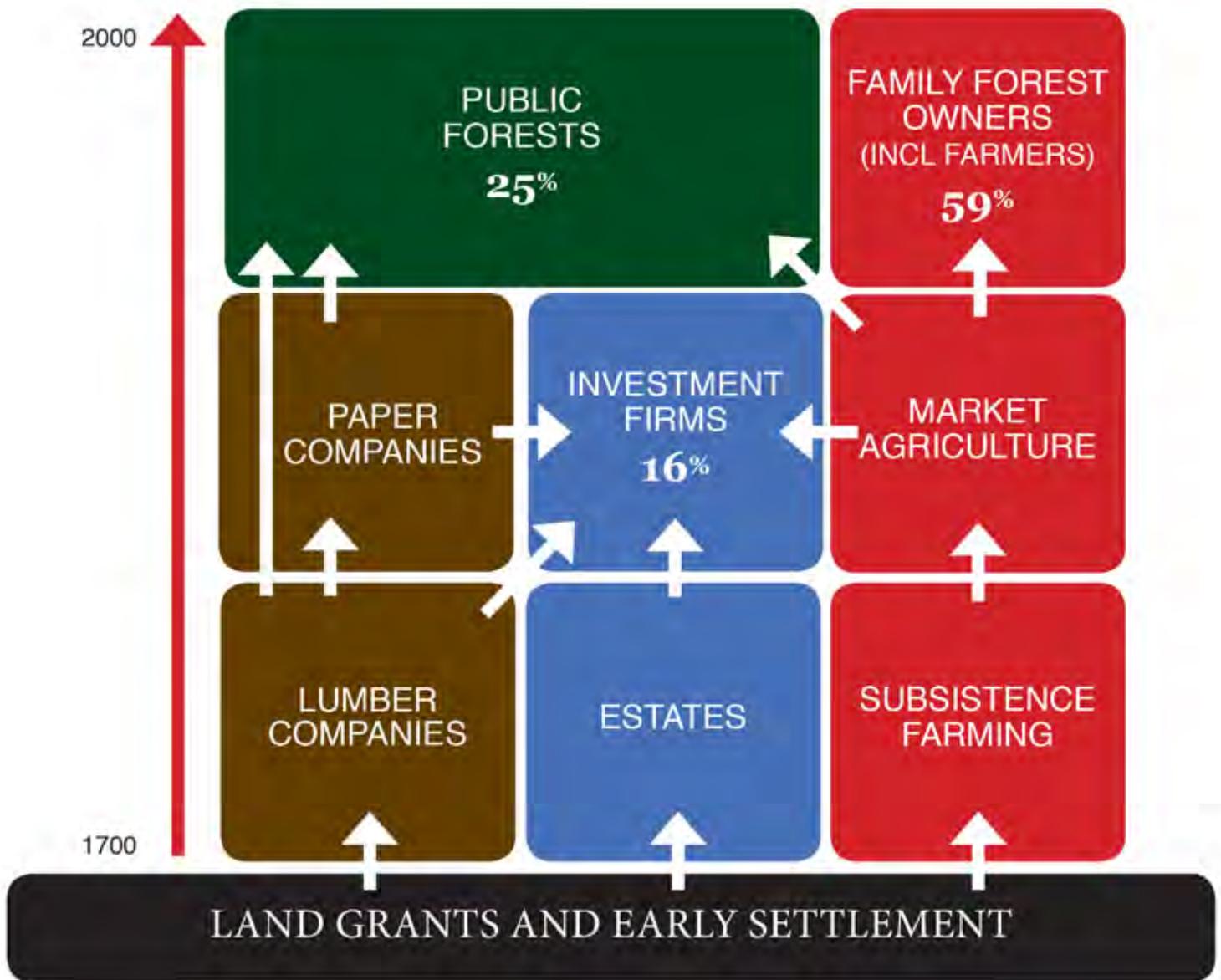
Over 100 tree species are found in New York State. Conifers (pine, spruce, fir, hemlock, and cedar) are in various places of the state with spruce and fir concentrated in the Adirondacks. Deciduous species (maples, oak, cherry, beech, birch, hickory, etc.) are the dominant group and occur in every county of New York. These species, both conifers and deciduous, reproduce naturally and grow wherever



conditions permit. With the abandonment of farm lands in the 1930s, old fields quickly seeded into the native tree species. Some land, on the state-owned Reforestation areas, and some private lands, were planted with red pine, white pine, Norway spruce, and Scotch pine. However, these areas account for less than 4% of all forests of New York.

Ownership of New York's forests has changed dramatically over the last 300 years. During Colonial times, small subsistence farms held much of the forest along with lumber and paper companies. At the end of the 1800s the publicly held Forest Preserve was formed. The late 1900s saw major shifts as farmers held less forest land, and lumber and paper companies transferred forest ownership to separate investment firms (often referred to as Real Estate Investment Trusts or Timber Investment Management Organizations).





## Changes in Ownership of New York's Forest Land Over the Last 300 Years

“*Today the single largest ownership group of New York's woods and forests are the small family woodlots.*”

Individuals, couples, and families collectively hold almost 60% of all forests of New York. They are not farmers but hold the land for a wide variety of purposes, of which timber production for financial return is but one objective. Recreational pursuits, part of a home site, enjoyment of their woods, a legacy for children - these are just a few of the various reasons people own forest land today in New York. Individual forested properties range from just a few acres of 5 to 10, to larger ones up to 100 or 300 acres. However, the average size of ownership is about 50 acres.

A very important part of New York's forests is the local community in which they exist. Throughout much of our history, people living in and around forests tended to be familiar with how forests can be managed and how they evolve over time. Many had grown up in the same socioeconomic community. However, in recent decades there has been a major shift in rural communities. Many have become suburban with most residents working in urban centers or not otherwise directly connected with land as a production unit. Attitudes towards forests and desirable uses are changing. Citizens are asking for more regulation and control. What a landowner can do with their land is changing. This affects not only forests but any land in the community and is often more onerous where a patch of forest is affected.

“ For the foreseeable future we will continue to have forests in New York.”

The amount of forests is not expected to change much from about 19 million acres. The major reason for increases in forest cover over the last 100 years was abandonment of land from agriculture. This has stopped while increased urbanization, residential and other land uses, roads and utility rights-of-ways may increase. A reasonable assumption for future planning is that the amount of forest land will remain at its present level, although regions within the state will face different pressures. High taxes force owners to sell land. Increasing suburban development creates smaller parcels. Higher alternative prices for alternative land uses leads to conversion.



## WOOD PRODUCTS

New York has always been a leader in the production of a wide variety of wood products, from lumber for houses to wood for fine furniture to pulpwood for paper, and more recently, woody biomass for energy production. Over the last 120 years, the use of our forests for wood products has changed as have the methods of harvesting the trees. Even within the last 20 years major shifts have occurred both within the entire manufacturing economy nationwide and in New York’s forest products industries, (aggregated into 3 broad sectors: lumber and wood products; paper and allied products; furniture and fixtures with data from the US Bureau of the Census; Annual Survey of Manufactures). The combined forest products sectors for New York in 2016 accounts for 7% of all manufacturing value of shipments and 9% of all manufacturing employment. **This ranks the Forest Products sector 6th in output and 6th in employment of all manufacturing sectors.**

We live in a dynamic economy, and timber harvesting has seen dramatic changes over the last 100 or more years, especially within the last few decades. The chain saw, a staple piece of equipment in logging

has evolved over the last 60 years. Low impact harvesting equipment enables loggers to practice sustainable harvesting in areas once thought to be uneconomical. Today’s timber harvesters, or “loggers,” are like today’s farmers. They are surrounded by high-tech machines that can fell a tree, trim it, and place it in the best location for transport out of the woods. They do minimal disruption to the existing forest, reduce hand labor, and are much safer for the machine operator while greatly increasing productivity. Modern timber harvesting requires a capital investment of often up to \$500,000. Firms need trained equipment operators and business managers and face a shrinking labor force. The professional logger is counting on professionally managed sustainable forests for many years for continual harvests. While much of the trend is to increased mechanization, there is a niche market for companies that develop harvesting techniques for efficient harvesting on tracts as small as 5 acres.

In the mid-1800s, New York led the nation in softwood production. Lumber production in the state peaked in the early 1900s. However, our competitive advantage lay in our immense hardwood resource and the emerging hardwood markets.

Sector	No. Employ	% Total
Fabricated Metal Products	48493	12%
Food Products	41681	11%
Computer & Electronics	41439	10%
Machinery	38256	10%
Chemical Products	36277	9%
Forest Products	34284	9%

Sector	Value Ship (\$ millions)	% Total
Chemical Products	\$ 27,588	19%
Food Products	\$ 19,669	13%
Machinery	\$ 14,125	10%
Computer and Electronics	\$ 13,377	9%
Fabricated Metal Products	\$ 11,155	8%
Forest Products	\$ 10,170	7%

From the 1950s until about the year 2000, hardwood lumber increased while softwood production remained stable. During the last 20 years, hardwood lumber production has varied widely, largely in response to the dynamics of hardwood lumber markets and the general economy. In 2016 (the last year for which data is currently available) New York's lumber output was 455 million board feet - 76% hardwoods, 24% softwoods.

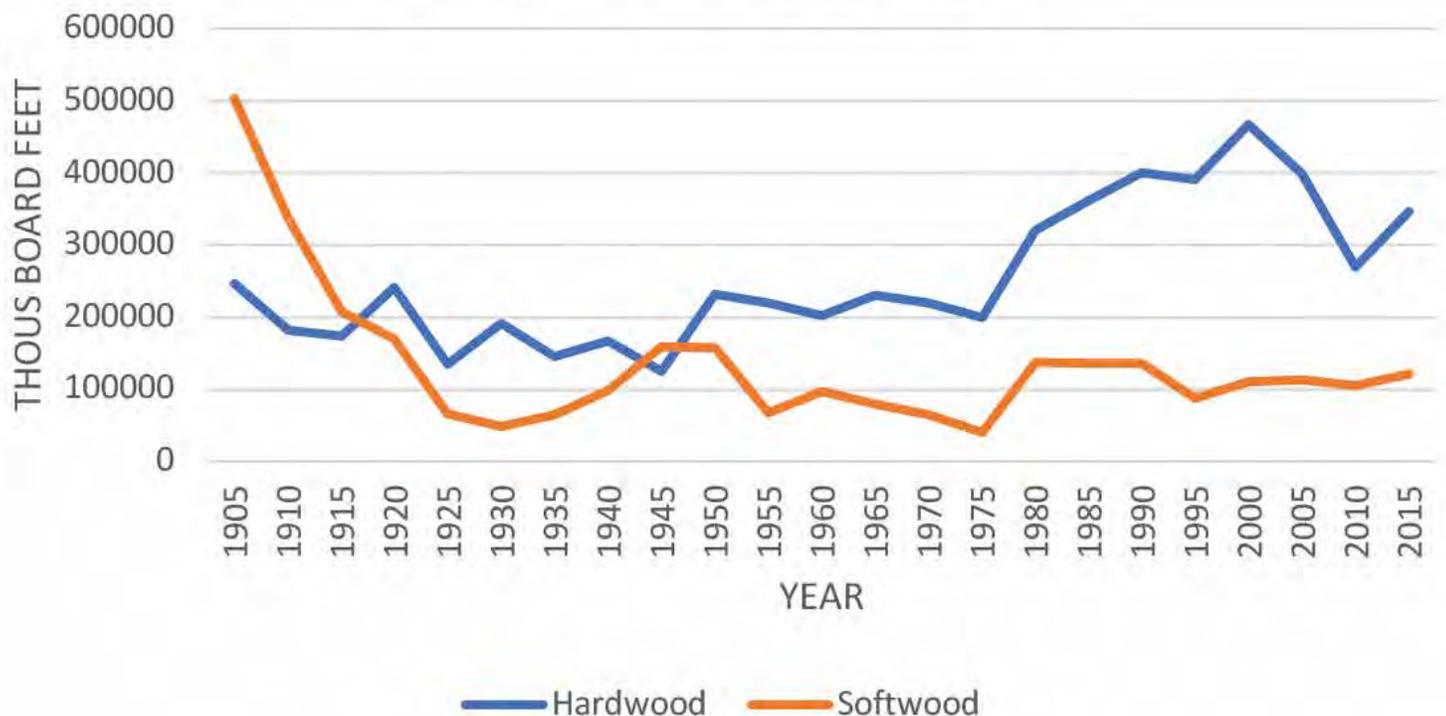
kiln drying techniques are commonplace. Modern sawmills look very much like any other manufacturing or assembly plant with trained workers monitoring machine operations instead of handling logs and boards by manual labor. Paper production, originally concentrated around the Adirondacks and Niagara Falls regions, was a major industry. As in lumber, softwoods were the original species used, but by the 1960s hardwood pulpwood was a major component of paper produced in New York. The number and structure of the paper mills has changed. In the 1930s, the 39 paper mills operating in New York constit-



The technology of milling logs into lumber has changed and today computerized sawing, use of laser guides and automated sorting and sophisticated



## LUMBER PRODUCTION IN NEW YORK STATE: SELECTED YEARS, 1905-2015



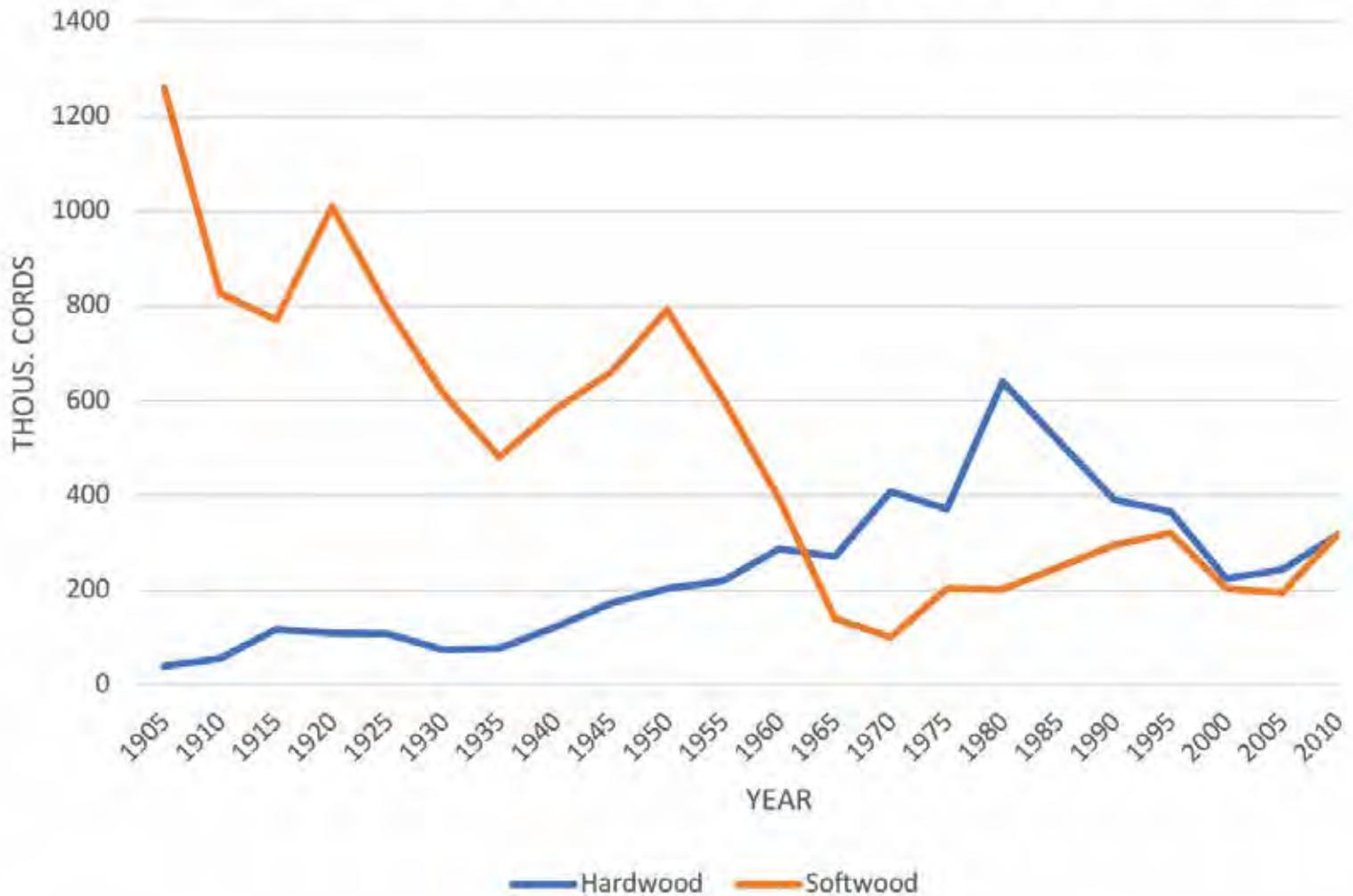


ed the bulk of the employment and value added in the paper industry. By the mid 1960s, 18 mills using pulpwood were operating in New York. Coincidentally, many small firms that converted paper into products also closed while new ones opened. The paper mills in New York concentrated on fine paper production for writing and book and magazine publishing compared

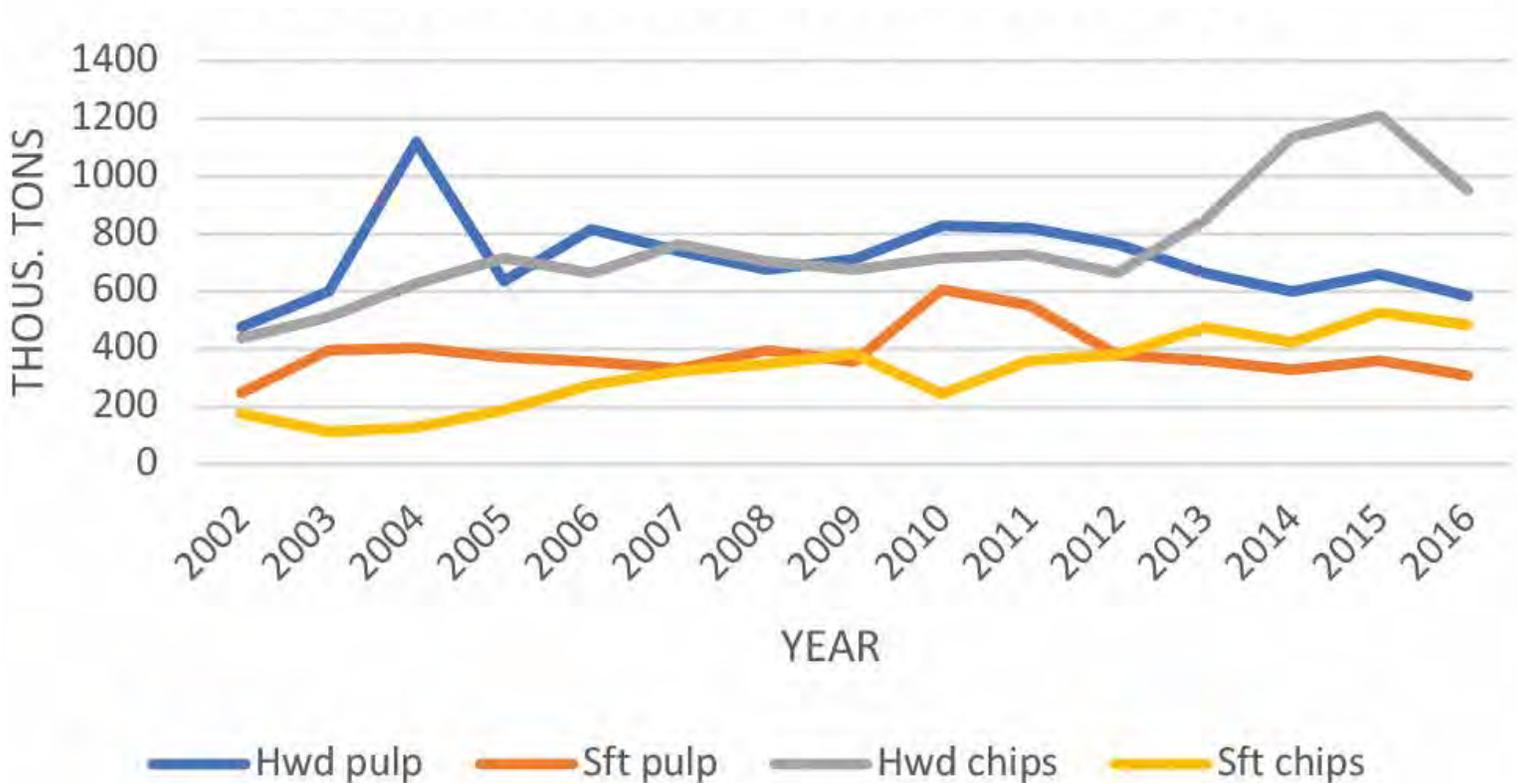
to Canadian mills producing newsprint or southern mills producing kraft paper for bags and corrugated boxes. Today there are only 2 mills in New York State that produce paper from wood. However, these two mills are constantly updating and are among the most technically advanced in the nation with automated machinery replacing hand labor. Other paper-converting firms are still located around the state, accounting for both employment and value-added to our economy. These converting operations bring in paper from other regions or reprocess recycled paper to make a wide variety of products that may enter the worldwide economy.

Closely related to solid wood (pulpwood) for paper production is the recent production of wood chips both for paper and the emerging wood-for-energy industry. Within the last 20 years this industry has grown significantly. While production of solid pulpwood has remained relatively flat for the last 20 years, chip production, particularly with hardwoods, has greatly increased.

## HARDWOOD AND SOFTWOOD PULPWOOD PRODUCTION IN NEW YORK STATE: SELECTED YEARS, 1905-2015



## PULPWOOD & CHIP PRODUCTION IN NEW YORK STATE IN THOUSAND TONS: 2002-2016



Secondary wood products have always played an important part of our state’s wood-based economy. Piano parts, dining room and other furniture, wood pallets, and a host of other products are made in New York State. Over half of these firms are located within the New York City metropolitan area. They utilize lumber from New York forests but also import wood from other states and often foreign wood species.

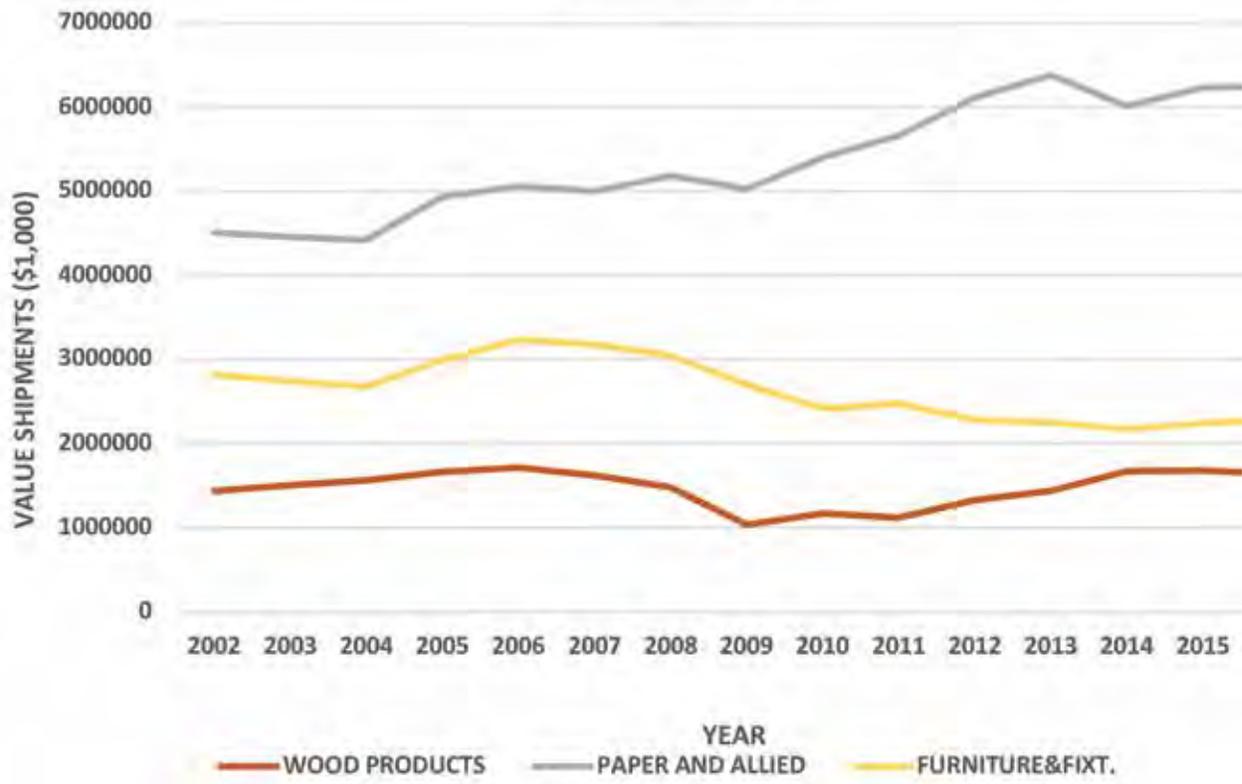
The entire manufacturing economy nationwide has fluctuated during the last 20 years as has New York’s forest products industries. The forest products industries are aggregated into three broad sectors: lumber and wood products, paper and allied products, furniture and fixtures with data from the US Bureau of the Census, Annual Survey of Manufactures.

Of the three sectors, New York’s paper and allied products has the largest annual value of shipments. Output increased over the last 20 years but is now only slightly higher than in the 1990s. In 1997 the value of shipments from paper and allied products in New York was \$5.1 billion. Subsequently output

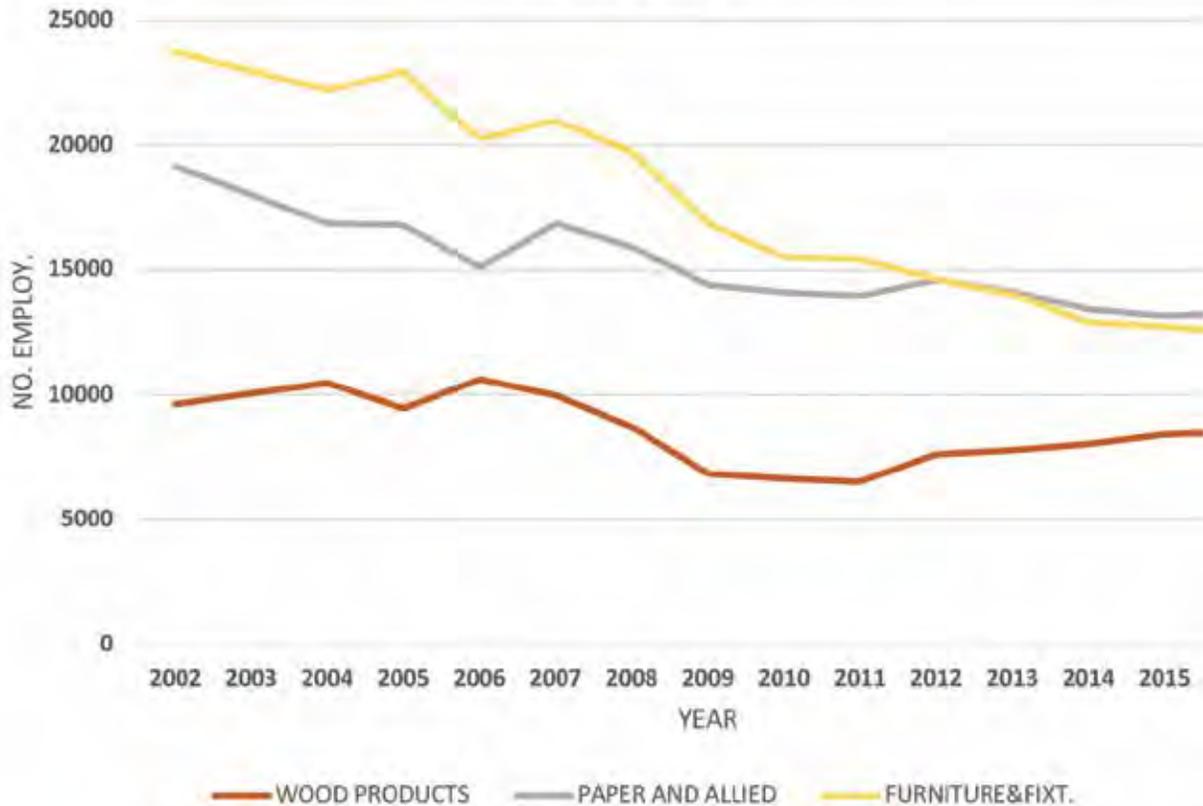
dropped then rebounded to \$6.2 billion in 2016. Value of shipments from New York lumber and wood products sector has remained relatively stable: \$1.3 billion in 1997 and \$1.6 billion in 2016. New York’s furniture and fixture manufacturing output rose and fell from \$2.1 billion in 1997 to \$2.3 billion in 2016.

Employment is of great concern to policy makers. All manufacturing employment has declined during the 21st Century and the trend in all forest products is similar. **Collectively the three sectors constituting forest wood outputs account for about 9% of all manufacturing employment.** This has remained relatively constant over the last 20 years, although within the group, changes are taking place. Lumber and wood products employment has remained relatively stable. Employment in furniture manufacturing and paper production has declined largely due to shifts in consumer tastes and living styles. Do-it-yourself assembly of furniture and cabinets are commanding a large share of the market. Families no longer collect heirloom fine furniture much as they do not desire fine china or crystal ware.

**FIGURE 1. NY: FOREST PRODUCTS INDUSTRY  
VALUE OF SHIPMENTS (\$1,000)  
2002-2016**



**FIGURE 3. NY: FOREST PRODUCTS INDUSTRY,  
EMPLOYMENT  
2002-2016**



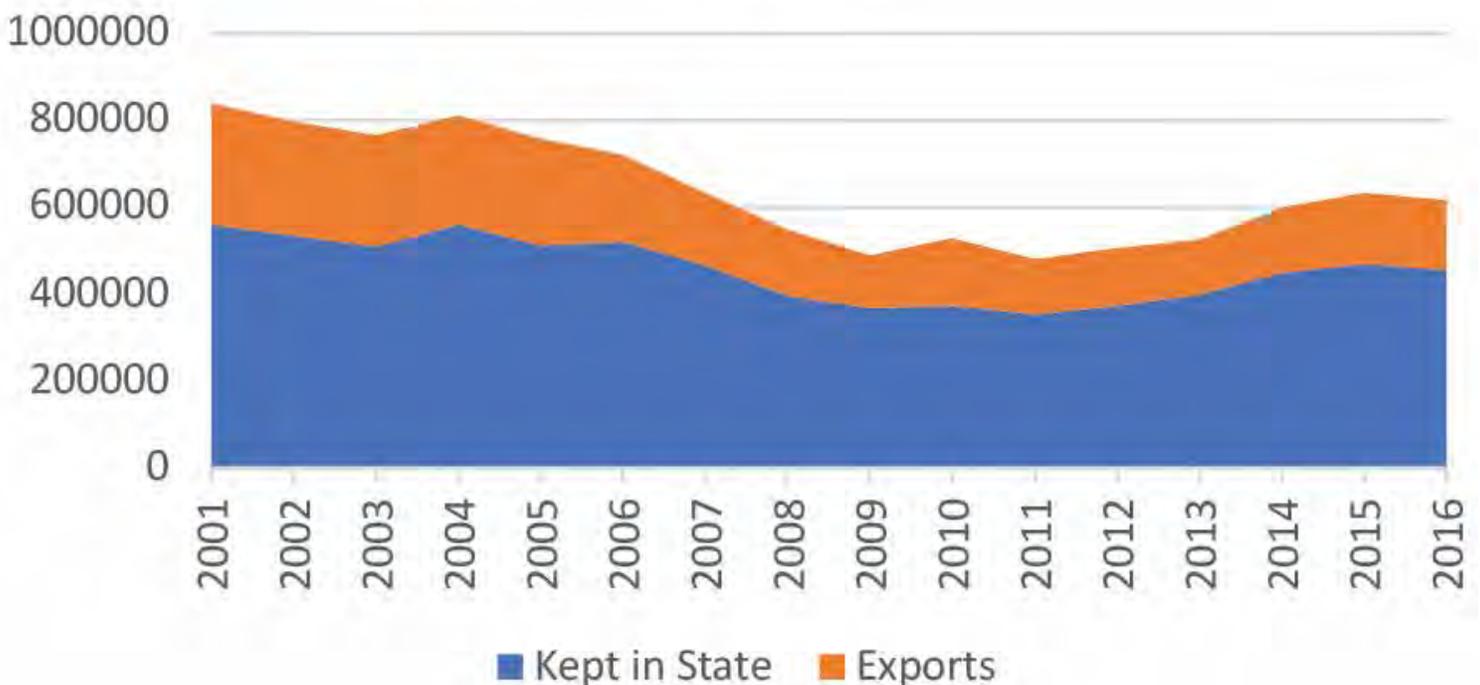
# TIMBER HARVESTING

Timber harvesting in a sustained manner is key to providing many of the other services of our forests. We have a wide variety of tree species suitable for many different wood-based products. Growing conditions across the northeastern United States favors trees and woodlands. However, not all forest lands in the state are available for timber harvest. The Forest Preserve lands in the Adirondacks and Catskills (some 4 million acres) are constitutionally withdrawn from any form of harvest. Steep slopes and inaccessibly tracts too far from all-weather roads limits economical harvests. Subdivision of land into small parcels of less than 10 acres also places severe limits on the logger's ability to economically conduct harvests. In several places across the northeast, logging contractors have been able to efficiently harvest these small tracts in a sustained manner. It requires skillful combining of several parcels and new types of felling and skidding equipment. Overall in New York State, 15.9 million acres are classified by the USDA Forest Service Forest Inventory as timberland - lands from which timber may be harvested economically and not prevented by law.

The responsibility for overall sustained timber harvesting falls on the thousands of family forest owners who control the future of 60% of the forests and the foresters and timber harvesters who work with them. Studies have shown that some forest owners do not want to have any trees cut on their property. Even though land ownership changes on average every 20 years and new owners may favor timber harvesting, at any one time some forests are not available. Conservatively, at any one time up to 20% of the timberland held by family forest owners might be withdrawn from timber harvesting.



## Sawlog Consumption in New York and Exports: 2001-2016 (Mbf)



“ Currently the growth of timber exceeds the present harvest in New York.”

Accounting for natural mortality - loss to insects and disease - growth still exceeds harvest. In the North Country, a recent study shows that the available forests can sustain present harvest levels and could sustain an expanded timber-based industry. Given the favorable growing conditions in the rest of New York, growth on all forest land, growth is expected to exceed harvest for several decades. However, factoring in possible parcelization and owners' objectives, the ability to sustain any additional harvest may be questionable in the lower Hudson Valley and other regions close to urban centers. **Across the entire state, high property taxes and rising demand for housing will put pressure on forest owners to sell the land for conversion to nonforest uses.**

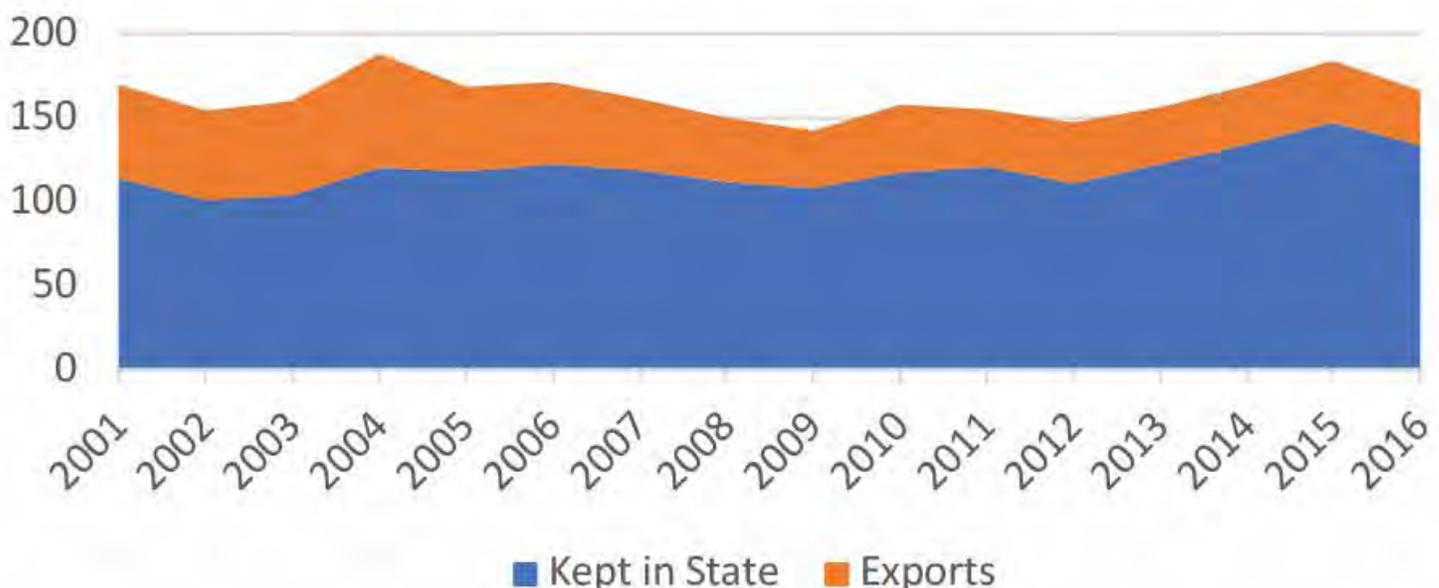
The size, species and the type of harvesting can significantly affect wood availability. These in turn depend on having a labor force and equipment for harvesting and markets for different species and size and quality of timber. In the future, highly trained loggers may be in short supply. Equipment continues to evolve as markets develop for biomass and other fiber products. At present many of these operations require large tracts and extensive landings and road systems to operate efficiently. The future of fiber product harvesting may rest with further innovation

in harvesting machinery. Markets for wood products have always changed in New York. Certain species such as sugar maple, yellow birch, and black cherry have always found ready markets for logs of high quality (large diameter, long and straight with few knots and no decay). Demand for other species has increased over the last 20 to 50 years and now red oak and red maple (soft maple) is actively marketed. New York's softwood logs face different markets from those of 100 years ago when New York was a leading softwood lumber producing state, but exports have led to continued markets.

Markets for pulpwood have changed with the shutdown of many New York mills. Along with the emerging biomass market, exports to other states and other countries is on the increase.

While the state has a good supply of forests and trees for wood products and the possibility of a trained labor force and adequate markets, **the major factors limiting development of the wood-based sector are those that affect all businesses in New York State and across the nation: high taxes, government regulations, and changing export markets.** An additional factor peculiar to the forest-based economy are public misconceptions of how forests develop and grow and what needs to be done to keep forests healthy and sustainable.

## Roundwood Harvest Used in New York and Exported: 2001-2016 (mill. cu.ft.)



# FOREST RECREATION



Recreational use of New York's forests goes back to Colonial times. Especially with the rise of cities accompanied by the desire to "get back to nature," the wooded areas of the state were sought out for spiritual refreshment and enjoyment. More active recreational uses developed more recently and today skiing, hiking, camping, hunting, and viewing fall foliage are all major recreational uses of woods and forests across New York. These activities are often the dominant reason the family forest owners hold their lands but many of the 18 million residents of the state seek our forested areas across the state for recreational activities. While activities are often concentrated on the public forest lands (State Parks, State Forests, Forest Preserve) all the forests form an important backdrop for hiking, canoeing, and many other activities. **When people are asked why they chose to recreate in New York State, a major reason is because of the rich and diverse forest and the closeness to their home.**

About \$4.8 billion in sales for forest-related recreation take place each year in New York State. An estimated 32,000 people are directly employed in forest-related recreation activities with payrolls of \$784 million (based on various sources). Activities include camping, hiking, skiing, snowmobiling, hunting, wildlife viewing, and viewing fall foliage. Camping is the biggest use with 22% of estimated sales and comparable employment.

Hiking accounts for another 18%, wildlife viewing 13%, and fall foliage viewing 12%.

Most of the economic impact of forest recreation occurs in the rural areas of the state. These are areas where employment opportunities are scarce, yet residents wish to preserve their established way of life. Jobs are often seasonal and depend on favorable weather (sunny days in summer, sufficient snow in winter) and importantly, the character of the forest within which recreation occurs. The beauty of our trees in late autumn is enhanced through biodiversity - the wide variety of species; the patchwork of different landscapes of conifers, hardwoods, open spaces; and the diversity of recent timber harvests. Hikers and snowmobilers want partly open trails and the ability to see vistas across the landscape. Careful timber harvests enhance the recreation experience. Indeed, many of the trails in and around the Forest Preserve are on old logging roads. Timber harvests can also reduce the amount of dead or dying trees that pose a hazard to campers, hikers, skiers, and others. Biodiversity can also be improved through forest management, giving a more interesting visual experience. Insects and diseases pose a constant hazard to all forests, and New York has its share of pests. **Keeping the forest healthy through periodic harvests improves all uses, especially recreation and watershed values.**

Keys to providing for future recreational use of New York's forests and woodlands are landowners' attitudes, recreational support activities, insects and disease, and weather patterns.

Public forests face increasing recreational pressure to provide camping, hiking, winter sports, and access to remote areas. Coincidentally, access to private forests is limited. Faced with unhappy incidents and reports of neighbor's problems, many landowners post their land against any trespassing. Surveys (US Forest Service, 2012) show that across the state, 75% of owners with holdings over 10 acres have posted their land. This severely limits the amount of recreational land available. However, owners often will permit specific people who they know and respect to use their land for limited hunting or hiking. Rights-of-way for snowmobile or cross-country skiing are dependent on cooperation of many owners, which requires some

regional organization (private or possibly public) to obtain easements and insurance ss protection for owners.

Recreationists want facilities for dining, lodging, and support of equipment (snowmobiles, skis, etc.). **Successful forest recreation requires local communities to support these facilities through intelligent land-use planning and zoning, highway maintenance, police protection, and other needs.** Also desired in more remote areas of the Adirondacks and Catskills are search and rescue teams and local guides. Private businesses are subject to all the difficulties of operating in New York State. Outbreaks of insects or unpleasant weather can severely limit recreational use for any season. These are often temporary but are another difficulty of operating a business that is heavily dependent on tourism for survival.



# WATERSHED VALUES



Using forests for watershed protection has a long history in New York. The original reasons for establishing the Forest Preserve in the Adirondacks in the late 1800s included both ensuring a future timber supply and protecting the headwaters of the rivers (Hudson) that supply water for New York City. Timber supply was not included in the final Constitutional amendment establishing the Preserve, and at the time, it was thought that an untouched forest was the best for watershed protection. **Over the last 140 years, studies have shown that an actively managed forest can provide the best watershed protection, especially in our relatively populous northeastern United States.** Where forests exist in a mosaic of farm and residential lands with transportation corridors the woods provide necessary filtering of harmful pathogens, store water, and allow for regular movement of water to reservoirs, etc.

Many of New York's municipalities depend on a public watershed with reservoirs and deep wells for their very existence. The City of Albany, with the Nature Conservancy, manages the City's 4,000-acre forested watershed. Both Syracuse and Rochester draw their water supplies from the Finger Lakes, located in mixed forest-farm landscapes of private ownership. Across the state, smaller cities and villages usually depend on forested watersheds surrounding reservoirs or containing deep wells to provide municipal water supply. Municipalities may control land use over part of the watershed, however management of

the watershed forests and woodlands often depends on private owners and loggers applying "Best Management Practices" to insure safe and clean water.

New York City, while not depending on the Hudson River anymore for potable water, now depends for its very existence on careful management of the Catskill region. In the five-county New York City Catskill watershed region forests are the dominant land cover, extending over 76% of the land. The City, New York State, and United States Federal Government have invested millions to insure land use practices within the multi-county region will keep the water supply pure and constant. Private ownerships prevail, and the actions of these thousands of individual woodland owners will determine the fate of New York City's lifeblood. **Across the state, over 15 million New Yorkers depend on the state's forests and woodlands for protection of public drinking water supplies.**

Spreading suburban housing developments with buildings, asphalt driveways, and more all-weather roads reduces the ability of rainwater to percolate into the ground. By contrast, forests and other open spaces allow water to penetrate into the ground and move slowly to streams and lakes. Forests especially enhance the water-holding capacity of the land and often reduce floods. Carefully managed forests with planned timber harvests keep the remaining trees and understory of brush and smaller trees in a healthy condition. This helps to reduce acid rain runoff to lakes and ponds.

# WILDLIFE HABITAT

Possibly the forest activity most interconnected to all other forest-based activities in New York is wildlife habitat. Many different species of wildlife inhabit the woods and forests of New York. The citizens enjoy touring around to view wildlife in natural settings. Hunters regularly pursue game species at their favorite location each year. Wildlife are also valued just for being an integral part of the ecosystem. Hunting and wildlife viewing in New York's forests and woodlands contribute almost \$800 million in sales to local economies. As with many other recreation-related activities, most of this impact is felt in rural areas.

The character of the forest is key to success of birds and mammals that live in our state. Many species do not thrive in vast, over-mature forests. Instead they require a mix of species, size of trees, and openings in the woods where sunlight penetrates, so young trees and shrubs will sprout. **Timber harvests are the major way a forest can economically be managed to provide for animals' needs.** Some special alteration to a standard timber harvest is sometimes necessary, however, often a typical logging under supervision of a forester will sufficiently improve the wildlife habitat.

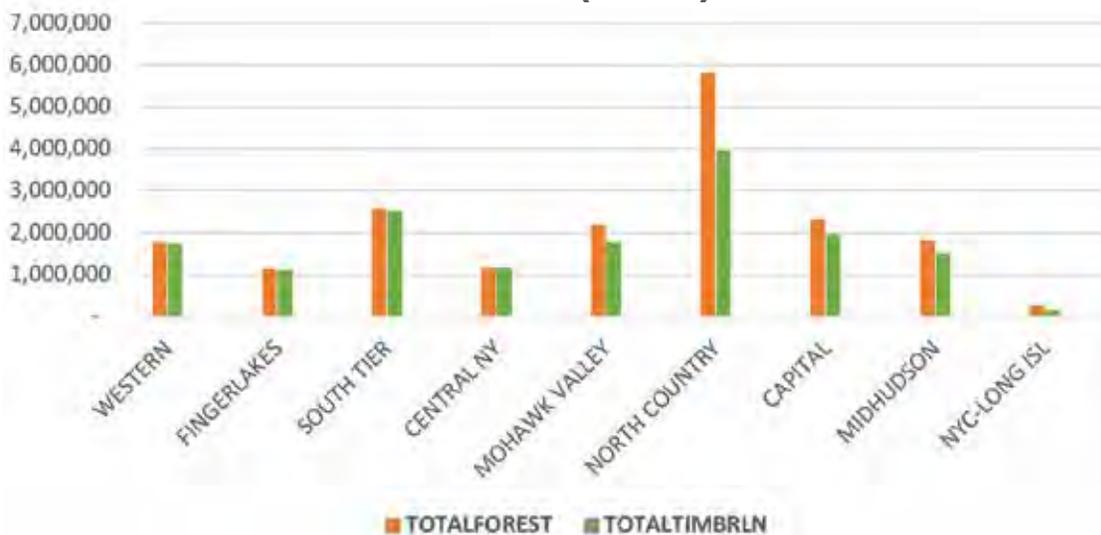
Private owners, since they hold the bulk of forest land throughout the state, hold the key to successful wildlife habitat. Our mix of various ownerships and land uses as found across much of upstate New York can provide ideal wildlife habitat. Larger animals, deer, bear, and more recently moose, move across several small to medium-size ownerships. Movement is only possible by interconnected patches of woods, logging roads, and powerlines right-of-ways, which

are often periodically cleared and have young vegetative cover, or old farm roads.

While the amount of forest land in New York has been increasing, the trees and character of the forest has been changing. In 1953, small, seedling-sapling stands made up 17% of the timberland. (NOTE: Timberland is classified as trees available for harvesting. Thus, the Forest Preserve, State Parks are not included. Forestland is the total of the timberland and preserve.) By 1968 seedling-sapling stands accounted for 6 million acres, or 43% of all of the timberland at that time (14 million acres). This was due to the natural regrowth of forests on abandoned agricultural lands. Since then the area of these young stands has been decreasing. Even though the total area of forests has increased, by 2012, these young stands were found on only 10% of forested area across the state. These are the type of young forests that many wildlife species require for successful development.

Management of existing timberland is key to providing adequate wildlife habitat. Public managed forests, as on the reforestation and wildlife management lands, are actively managed for wildlife. Private forest landowners often depend on a timber harvest to provide the diversity and distribution of new trees and cover needed for wildlife. Specific harvesting methods are often recommended based upon the landowners goals for that property, (i.e. timber, wildlife, or aesthetics). At the regional level, a diversity of forest types and ages classes along with connected wildlife corridors will enhance wildlife habitat. With careful planning by owners and professional foresters, harvests can be used to achieve these goals.

**NY, ACRES OF FOREST AND TIMBERLAND BY REGION:  
2012 (acres)**



# BIODIVERSITY



Biodiversity is the amount of different species and variety of plant and animals that occur in a given area. **It is possible to have significant biodiversity within the confines of a front yard garden or pocket-sized city park, in a family woodlot, or an extensive forest tract.** Across the extensive tree-covered landscape of New York State there is potential for great biodiversity. Biodiversity is also being recognized in agriculture as having both ecological and economic benefits. Farmers and forest managers recognize the need to incorporate biodiversity into any management plan.

Biodiversity serves several purposes. It presents a more resilient ecosystem that is better able to withstand natural or human-made catastrophes, particularly in this age of climate change. A mix of plant species is necessary for many species of wildlife to survive. The landscape has been shown to be more stimulating when viewed as a patchwork of different tree species and a mix of open and forested tracts. The economic impact of fall foliage viewing in New York State is due largely to the tremendous variety and mix of species in our woods; the orange and reds of maples, mixed with the rich brown of oaks, interspersed with patches of white pine or spruce.

The impact of hunting and wildlife viewing would be greatly diminished were it not for the differences in forests caused by periodic harvests and creation of open areas.

Several things lead to greater biodiversity. Conversely, without consciously thinking about it, we often reduce diversity through human actions. The forest ecosystems present in the northeastern United States naturally contain a variety of species. However, different plant species require different amounts of sunlight and different animals require a variety of vegetative cover. Without human intervention, the mix will only be maintained through natural catastrophes such as hurricanes or wildfires, which unfortunately bring undesirable side effects. Periodic timber harvests can enhance biodiversity, but only if conducted recognizing the need to provide for future regeneration and the needs of other plants and animal species. Social and economic policies should enable landowners to manage their lands sustainably. Conversely, we need to avoid those policies that force owners to liquidate their timber for financial reasons alone - high taxes, pressures to convert the forest to a building or commercial site, or family emergencies.

# FOREST HEALTH



Maintaining healthy and sustainable forests in New York State is basic to any of the needs and wants of our society. Each of the many forest goods and services, from wood, recreation, watershed, wildlife, to climate stabilization, depend on our forests being able to grow and reproduce. Insects and disease pests, high-grading, excess deer browsing, wildfires, hurricanes - these natural and human-made calamities all decrease the ability of our woods and forests to sustain themselves and maintain vigorous growth.

Insects and disease are not new to our world. Humans have been battling unwanted pests for millennia. However, in today's global economy, the movement of goods is moving invasive insects and diseases to our forest at an increased rate. **As a global trade center, New York State now has more forest pests and diseases than any other state.** Valuable cherry timber is lost from the Asian Longhorn Beetle and ash from the Emerald Ash Borer. Forest Tent caterpillars can defoliate sugar maple trees, bringing a decrease in the amount of next year's maple syrup. Large infestations of Gypsy Moth or Forest Tent caterpillars have contaminated water supplies by the accumulation of excrement and dead insects. These same insects disrupt forest recreation. No one wants to go camping with caterpillars crawling up the tent or dropping into your shirt as you hike.

We control insects and diseases by either altering our forest management plans or through direct chemical or biological controls. Practicing more biodiversity helps. Harvesting susceptible trees before infestation and removing those with a disease lessens the spread of a problem. Periodic thinning of young forest stands to keep trees growing vigorously increases the ability of the tree to withstand any attack. These practices cost the landowner money and can reduce the financial return from their land. Costs can be offset by public actions that lessen the other burdens of land ownership. Chemical controls are also costly and if not correctly applied can lead to contamination of water supplies.

Deer are a natural component of the northern forests. Their preferred food source is young tree and shrub vegetation. Uncontrolled, deer can reduce the young tree growth, producing a virtual desert under the tree canopy. No tree reproduction is left for the next generation of the forest. Hunting and careful timber harvesting can lessen the effects of excess deer.

Wildfires in New York State do not produce the devastation found in the western United States. However, the danger exists that in certain areas of New York, forest fires could destroy not only valuable timber but also burn up homes. While fire can be used as a management tool to alter the vegetation on an area, in New York, its use is largely restricted to maintaining open fields in early succession stage, preventing complete change to a closed forest canopy. More important is conscious forest management that will reduce the amount of fuel (logging slash) on the ground and controlling tree and shrub species to avoid very inflammable ones. Hurricanes, while uncontrollable, have wreaked havoc in many woodlots. Here again, careful forest management can reduce the devastating effects on the forest by removing over-mature and weakened trees in a timber harvest.

Humans can have major effects on forest health by unmanaged tree cutting through high-grading and timber theft. In high-grading only the best trees are cut and the poor ones left. This reduces the overall quality of the woods and reduces the gene pool, leading to less healthy forests in the future. Timber trespass, where thieves illegally cut and remove only the very best trees still goes on in New York State despite legislation in the last 20 years that severely increases the criminal and civil penalties for stealing timber. The effects on the forest are similar to high-grading in that the quality of the future forest is reduced. Both of these undesirable practices can be controlled through educating landowners, loggers, and the general public about intelligent forest management.

# CLIMATE CHANGE AND CARBON BENEFITS



Climate change during our lifetimes can affect New Yorkers more than some other parts of the world. A USDA Forest Service report (RMAP NRS9) predicts that within the next several decades the Northeastern United States will have a greater upward change in the yearly minimum temperatures than the rest of the country. This same report predicts the increase in summer heat will be most profound in the Northeast and Midwestern United States and that 50% of northeastern lands will see significant increases in drought. New York's forests and woodlands can make significant contributions to reducing the effects of impending climate shifts. Simultaneously, these wooded areas can store tremendous amounts of carbon, further reducing one of the causes of climate change. Trees, like all green plants, take in carbon dioxide along with other chemicals both through leaves and roots. These are converted into tissue for the tree to grow. Oxygen, a byproduct of this photosynthesis process, is released to the atmosphere.

When a tree is harvested for wood products, carbon continues to be stored in building materials, wood furniture, and other products. Using trees as biomass for energy production converts the carbon into energy, and like all combustible processes, releases carbon dioxide to the atmosphere. However, there are significantly less pollutants from wood chip combustion compared to fossil fuels, such as coal and almost no "acid rain." Trees, especially in residential areas, provide shade in summer reducing the need for electricity for air conditioners. A shady yard with lower temperatures enables families to enjoy the nice New York summers.

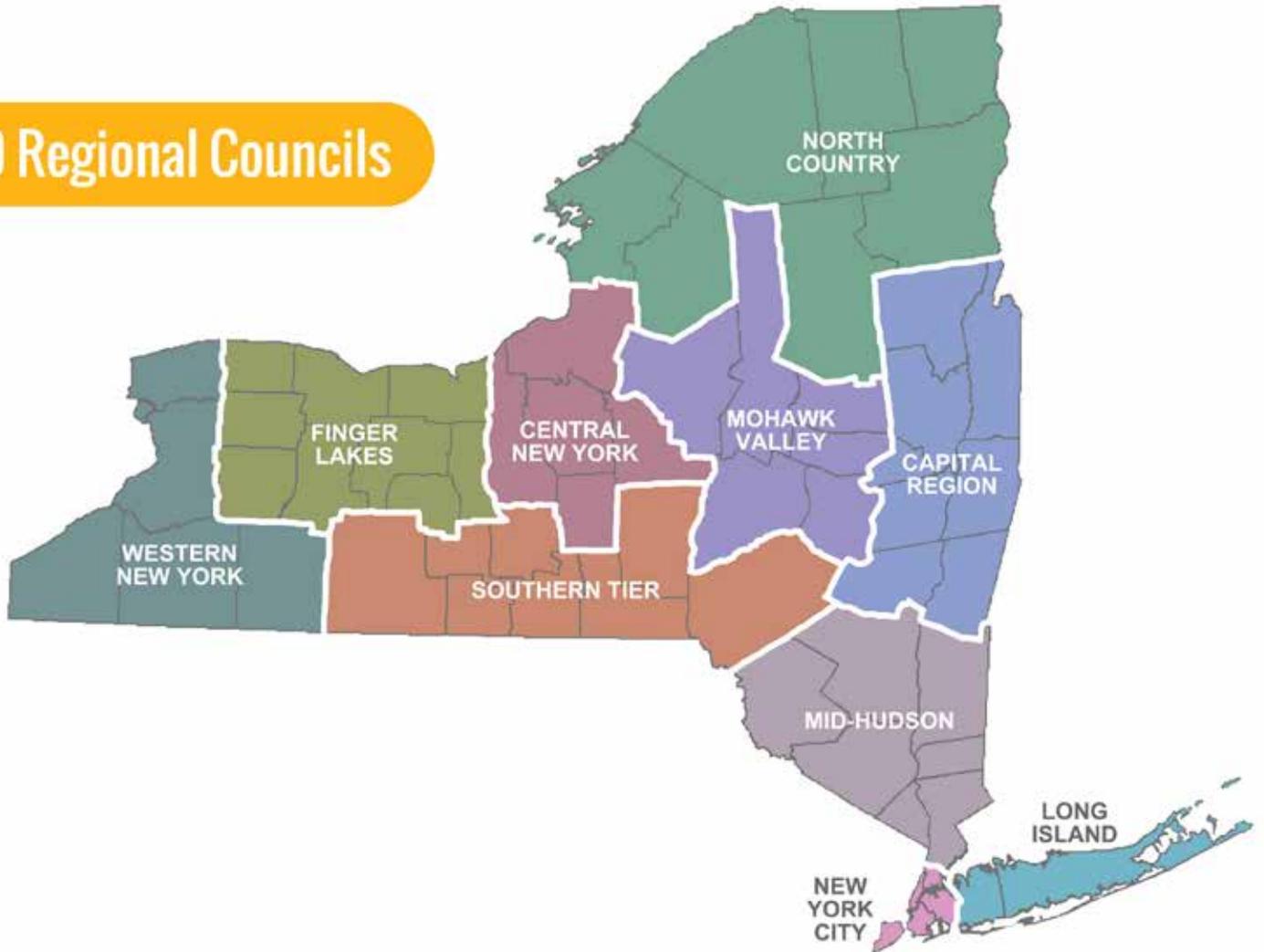
Some climate change is inevitable even with sustainable forests. Looking at New England and northern New York's forests, another Forest Service report (GTR NRS 143) sees an increase in winter precipitation along with rising winter temperatures. This will bring difficulties to the extensive spruce-fir forests of those areas while possibly benefiting other tree species. However, insects and diseases are likely to increase without the normal overwintering mortality of these pests.

**All the contributions of trees and forests to reducing carbon dioxide and global warming are enhanced by sustainable management of our wooded lands.** Vigorous trees growing without disease will fix more carbon than over mature or stunted ones.

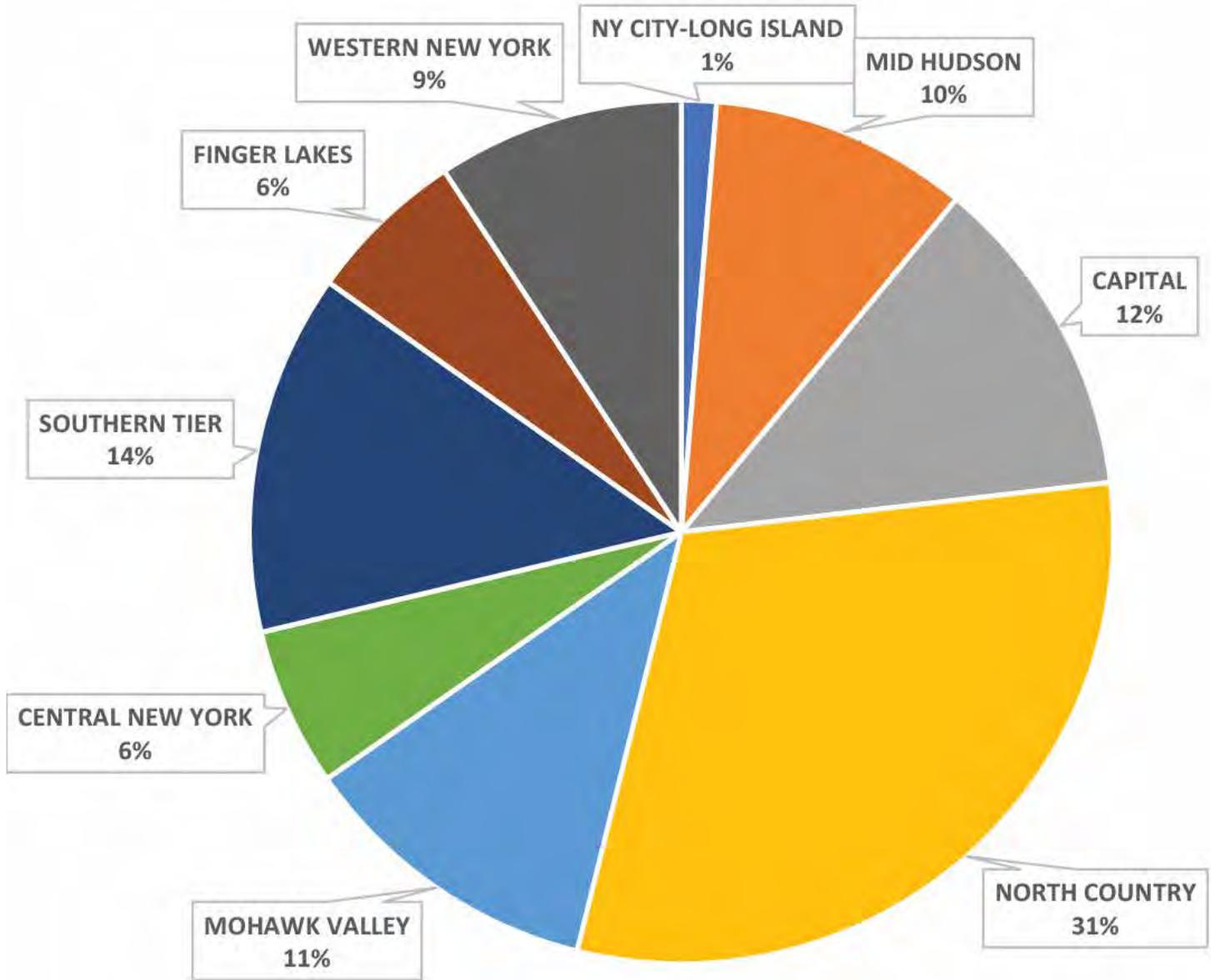
“*Through planned harvests and other improvement cuttings in our forests, the woods are kept healthy, produce wood and other forest products, and give us the added benefits of a better living space.*”

Being able to have the forests of New York for reducing climate change/global warming requires the same things as for other uses of the forests: property tax policies that do not cause owners to convert their forest holdings to liquidate all their timber or convert the land to other uses; enlightened local government regulations to permit sustainable timber harvesting; and technical assistance to forest landowners to develop sustainable forests.

## 10 Regional Councils



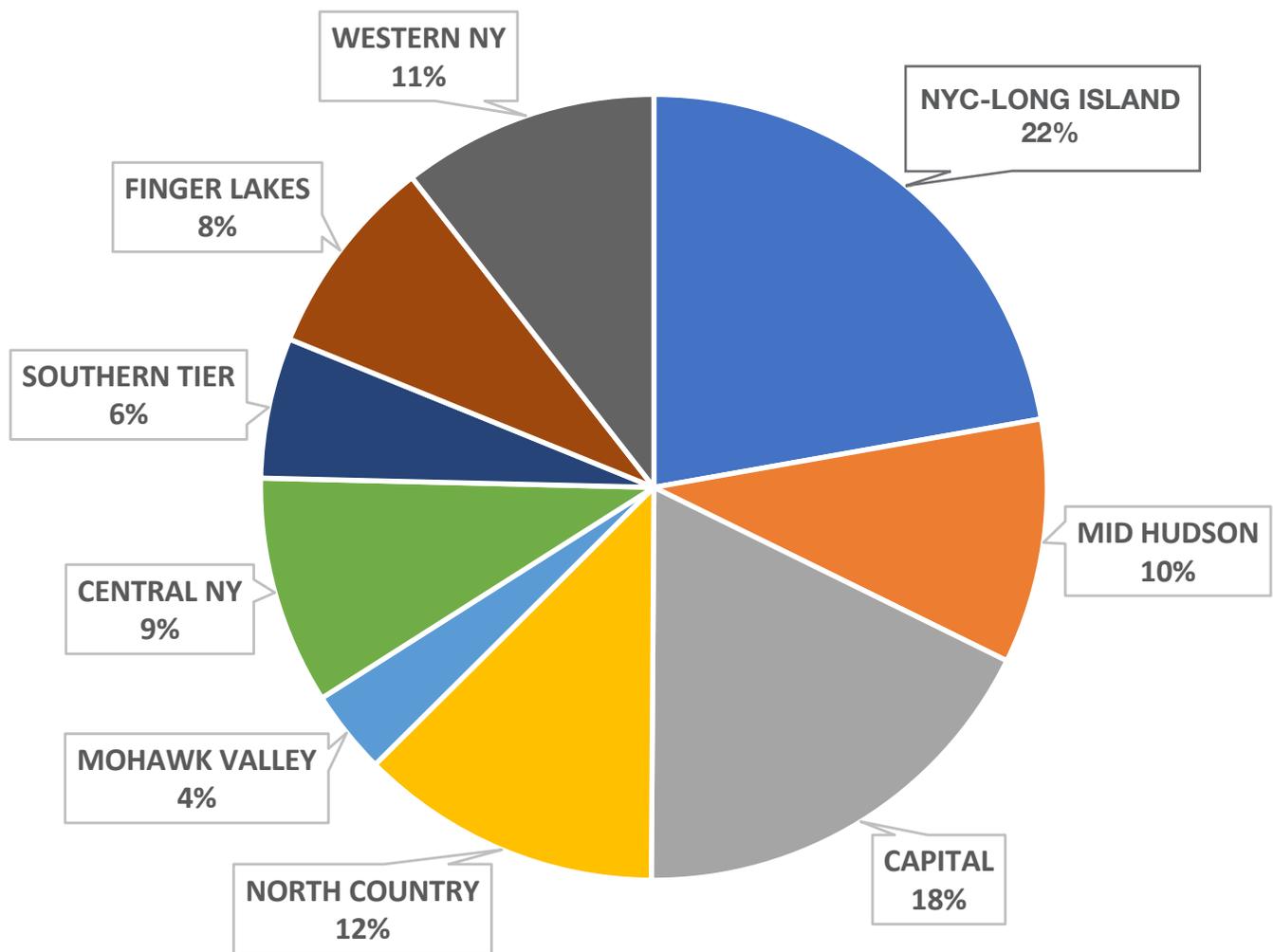
# NEW YORK FOREST LAND DISTRIBUTION BY REGION: 2017



## REGIONAL PICTURE

Every region of the state has some forest land, and each region has forest products firms. The New York City-Long Island region accounts for 22% of the total direct economic output (shipments, wages, employment) from wood-based economic activity, the Capital Region 18%, and the Mid-Hudson Region 10%. The remaining 50% of the Statewide economic impact of the forest products industries are spread among the other regions, ranging from the North Country through Central and Western New York, the Finger Lakes, and the Southern Tier. Similarly, forest recreation and other forest uses vary throughout the state.

# NY: DISTRIBUTION OF DIRECT ECONOMIC ACTIVITY OF FOREST PRODUCTS INDUSTRIES BY REGION



## NEW YORK CITY-LONG ISLAND

Half of the secondary wood-using firms of New York State are in the New York City metropolitan area. They range from small companies employing just a few people producing unique items to large firms serving international markets. Products include pianos, office and home furniture, boxes and barrels, and a host of other items. The lumber and other wood used by these firms may come from upstate forests or from imported tropical hardwoods. Importantly, they use wood as an input, employ people, and contribute much to the economy of the region. It is these secondary firms that this region accounts for almost 25% of the economic impact of New York's wood-based economy.

Water, from the forested Catskill region, is a second major forest-related activity affecting New York City.

Without forests in the city's watersheds in the Catskill Mountains that filter and help to regulate rain runoff, the city would be spending billions of dollars more on water treatment facilities.

A third important tie of the New York City and Long Island Region to the forests of the state are the people who live in the region but own property upstate or regularly vacation in the many forested areas of New York. The quality of their forests add to the quality of life for these individuals. Within this highly urbanized region as of 2012, 24% of the land is covered by forests, down from 34% in 1952. Just within the geographic bounds of New York City there are an estimated 7 million trees, covering 21% of the land within the city.



# MID-HUDSON

The earliest settlements in this region included many large “Patroons” (estates). Today, the Hudson Valley from Westchester County to Albany contains many estates. One of the most famous is Hyde Park, the Roosevelt Estate where a forest management plan was drawn up by professional foresters in the 1930s. Other estates occupy large tracts along the Hudson River.

The Region is 61% forested as of 2012 and the amount of forest cover has not changed since 1952. Other than the large estates the land is held primarily by family forest owners, many of which may reside in the New York City metropolitan area while others live on the land. Timber harvesting occurs but faces several challenges.

Subdivision is producing small individual ownerships in many areas. In other places, landowners are not very interested in having logging conducted on their property. However, the combined wood-based economy produces \$1.3 billion, similar to agriculture’s impact in the region. Almost 3,400 people are employed in wood-based activities, about half of those employed in agriculture.

The eastern Catskill Mountains in Sullivan and Ulster counties were once famous for resorts where enjoying the out-of-doors was combined with lavish dining and entertainment. The area still has some resorts, but more active outdoor recreation is taking place with hunting, hiking, and canoeing - all sports that utilize the forest as an integral part of the recreational experience.

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## CAPITAL

This region extends from the upper Catskills and Hudson Valley to the southern Adirondacks. In 1952, 52% of the region was covered in forests. In the last 70 years one million acres former farm land has reverted to forests bringing present forest cover to 69%. Landowners include farmers and other family forest owners. Residential development into former rural areas is leading to division of forest land into small 5 to 10-acre parcels in counties around Albany with most residents finding employment in the capital city.

The region has one of the highest wood-using industries’ output and employment across the state, dominated by the Finch, Pruyn and Co. paper mill at Glens Falls, one of two remaining mills that were once concentrated in the upper Hudson River area. Output in wood-based industries exceeds agriculture in this region and employs 5,200 people. Timber harvesting is an active endeavor throughout the region although mainly in the northern areas.



# NORTH COUNTRY

The region is a composite of 3 different geographic areas: Adirondacks, Tug Hill, St. Lawrence Valley. It is the most heavily forested region in the state with almost 80% in forests. This percentage has not changed in the last 70 years. Since the earliest European settlements forests have covered most of the land within the Adirondack Park and much of Tug Hill. In the St. Lawrence Valley, a mixed farm-forest landscape prevails. Overall, the region contains 31% of all forest land in the state, but only 25% of forests (timberland) are available for wood products production. The difference being the almost three million-acre Forest Preserve in the Adirondack Park constitutionally withdrawn from any timber harvesting.

Forest-related activities are the basis of the economy. In the mid 1800s more softwood lumber from the

North Country was shipped through the Port of Albany than anywhere else in the nation. Today the region provides 12% of New York State's direct economic impact of the wood-using industries and employs 4,260 people. Significant amounts of logs for lumber and fiber are exported to Canada. Recreation and tourism, closely tied to the forest landscape, are major parts of the economy. Employment and incomes rise or fall depending on the condition of the forests, demand for various products, and the weather. A severe outbreak of insects such as forest tent caterpillar or Gypsy Moth, discourages hikers and campers. A downturn in demand for paper or lumber puts loggers out of work. A cold, wet summer reduces recreationists. Extra heavy winter snow, especially in Tug Hill cuts off logging.



# MOHAWK VALLEY

This is also a complex region with the northern part of Herkimer County in the heart of the Adirondacks and much of Otsego County in the Susquehanna watershed. Overall, forests cover almost 65% of the land, 11% of all forest land in the state. Continuous forest cover the northern part of Herkimer County but elsewhere in the region there is a mixed farm-forest landscape with large dairy farms mainly in the valleys and forests covering hills. State-owned forests used for wood products, recreation, and other multiple uses are found across the region. Most were established in the 1930s from abandoned farmlands. Farming is concentrated on the better soils in valleys. Over the last 70 years, from 1952 to 2012, forests in the region have increased by one million acres.

A pioneering effort in forest cooperatives was tried in the 1930s with a mill and cooperating landowners (mainly farmers at that time) set up at Cooperstown.

The Otsego Forest Products Cooperative ran until the early 1960s. It was heavily subsidized by federal monies and eventually could not compete with other private timber companies.

Wood-using industries today consist of timber harvesting, sawmills, and some secondary wood using industries. Pulpwood and other wood fiber products are mainly shipped to other parts of New York or exported to Canada and elsewhere. Employment in wood-based activities is 2,235 people. The region provides 4% of New York's wood-based economy.

Forest recreation activities are often the major reason that many non-farm owners hold their forest land in this region. Hunting, summer homes, and winter sports are all dependent on forest conditions and how timber harvests are conducted. Absentee landowners provide much of the property tax base to many rural towns throughout the region.



## CENTRAL NEW YORK

Similar to adjoining regions, the Central New York Region has also seen large increases in forest land. From 1952 to 2012 forest cover in this region increased from 29% of the land to 49%. As with other areas of New York State, this increase is due to the regrowth of trees on abandoned agricultural land. Some state-managed forests occur here primarily in Oneida, Oswego, and Chenango counties, but private family-owned forests prevail. Timber harvesting is actively pursued by many owners some of whom intensively manage their land. Other owners have varied interests in their land with wood production only incidental to recreation opportunities or that the woodlot forms part of their home site and they value the solitude and wildness afforded by tree cover.

Wood-based activities range from timber harvesting through primary manufacturing of hardwood and

softwood lumber to further secondary manufacturing firms. Almost 10% of the state's wood-based economy comes from this region with over \$1 billion in output, similar to the agriculture sector. Almost 4,000 people gain employment from wood-based jobs.

The region is very accessible to metropolitan areas, and forest-related recreation is important to the economy, including hunting, fall foliage viewing, and landowners' individual pursuits for cross country skiing and other activities. A mixed farm forest landscape still exists across much of the region which enhances the recreational value for many visitors. However, this is changing with many rural areas seeing increases in home sites while agriculture is tending toward larger fields and fewer hedgerows.

# SOUTHERN TIER

Much of this region is located within the Susquehanna watershed. Forest uses affect water quality hundreds of miles away in the Chesapeake Bay. Today, forests cover 64% of the region, up from 41% in 1952 largely due to abandoning farming on small hill farms and alternative employment opportunities. Agriculture is still quite important with dairy farming prevailing. Output from wood-based sectors adds \$756 million to the economy while agriculture contributes \$2.7 billion. Slightly over 3,000 people are employed in wood-based activities while 10,000 are in agriculture.

In Delaware and Steuben counties large tracts of forests exist, while in much of the region smaller separate tracts, sometimes connected by a wooded cover, exist. This landscape provides some excellent

habitats for many wildlife species. Counties within this region usually report the largest deer-hunting harvest. Frequent timber harvests increase the young growth for cover and food supply - both necessary for deer to thrive. However, in this region deer also pose one of the greatest threats to forest regeneration.

Flood control activities were actively undertaken in this and surrounding regions from the 1930s through the 1970s. A catalyst for this was devastating floods in the Southern Tier especially in and around Binghamton. Flood-control dams were proposed and several eventually constructed. However, investment in the natural landscape has improved storm water retention and amelioration in a much more affordable way.



# FINGER LAKES

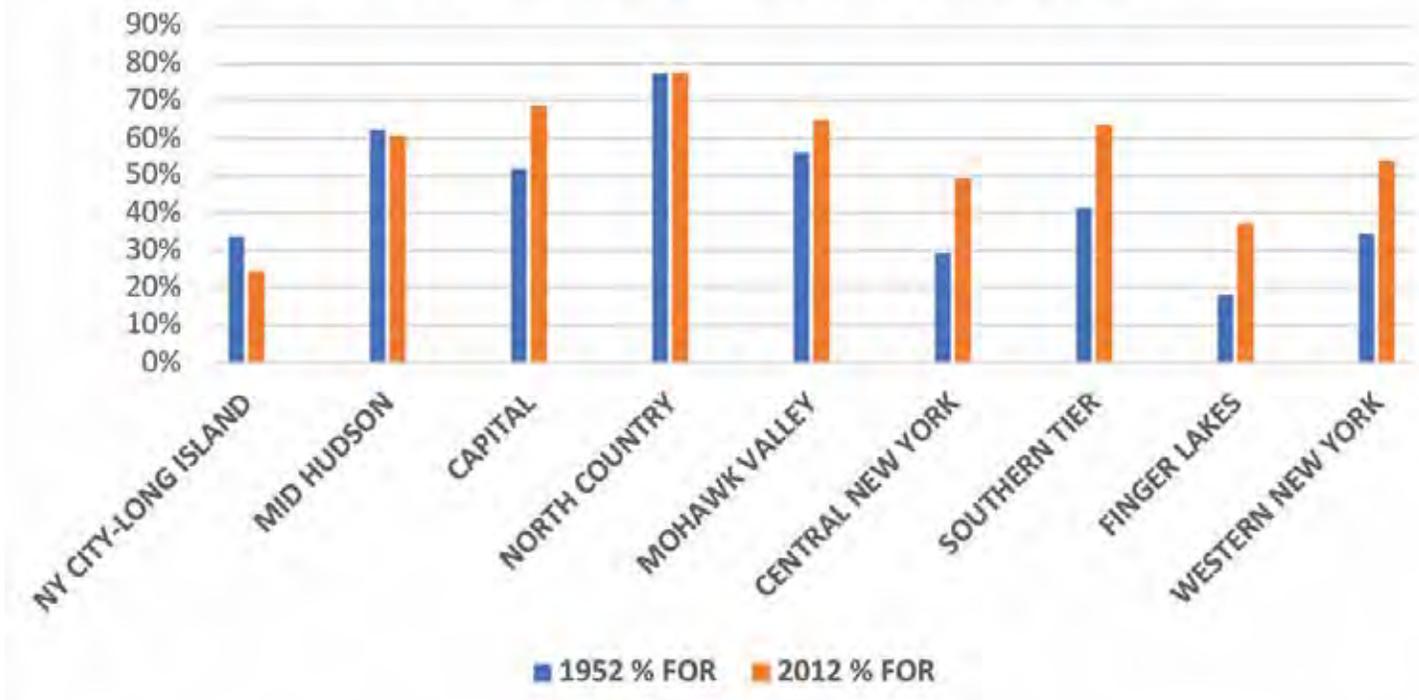
The region is perhaps more associated with wineries than trees but is almost 40% forested and contains 6% of all forests in the state. Even with continued intensive farming forest cover increased about two million acres over the last 70 years, raising the forest cover from 18% in 1952 to 37% in 2012. Forests are mainly located in smaller separate parcels surrounded by agriculture lands. Lands are quite accessible, and growing conditions favor many different species. The region has 7% of all forest land in the state and produces 8% of the wood-based economic activity and employs 3,600 people. Many other employment opportunities exist in the region's urban centers, and both agriculture and forest-based industry contribute a small proportion compared to overall employment in

the region. However, the forest-based activities provide a needed diversity to the economy.

Interestingly, the rise of wineries and other alcoholic-based drinks has increased the demand for new tree products - fence posts to support grape vines, 20 to 30-foot poles to support growing hop plants, and staves for cooperage barrels. Furniture plants and specialty firms use the output from nearby sawmills and import other wood. Logging faces several challenges in this region, as tracts grow smaller and many forests are valued as part of a homesite. Landowners may be willing to harvest timber but want assurances that their woods will be sustainable and open for them to enter, hike around, and have for future generations.

# WESTERN NEW YORK

NY: % FORESTED BY REGION, 1952, 2012



This region was once the center of fine furniture manufacturing in the United States. Many well-known firms were in and around Jamestown. Today the wood furniture industry is still important as are large lumber producing sawmills. Tree growing conditions are very suitable for producing high-quality timber for furniture and other uses. Some of the region's lumber is exported to other countries. \$1.3 billion of the region's output comes from wood-based forest sectors, and 5,000 people find employment in this area.

Forests cover 54% of the region, up from 34% 70 years ago. The most heavily forested areas are in Cattaraugus, Allegany, and Chautauqua counties with suburban encroachment taking over much land in Erie County around Buffalo. Forest owners are typical for much of the state. Many of these people live on their property, others are absentee or part-time residents. Most have little knowledge of forest management. Here and elsewhere, private professional consulting foresters along with state and federal agencies, can provide the expertise for owners to practice a sustainable forest management on their land.



## SOURCES

**Forest Land:** Much of the historical data has been cited and reported in other publications. For that and the most recent information, the reader is referred to: Widmann, Richard H et al. 2015. *New York Forests, 2012*. USDA Forest Service, Northern Research Station, Delaware Ohio.

**Wood Products:** Historical figures on lumber and pulpwood production are in Canham, H.O. and G.R. Armstrong. 1968. *Long-Term Trends in New York State's Timber Industries and Their Implications*. NYS Office of Planning Coordination, Albany NY. Recent data was provided by Sloane Crawford, NYS DEC, Albany NY as contained in Annual Stumpage Price Reports and Timber Products Output reports published by the New York State Department of Environmental Conservation, Albany New York.

**Data for charts and graphs on employment, capital expenditures, and other economic indicators came from:** US Bureau of the Census, *Annual Survey of Manufactures*. Various dates.

**Forest related sectors include:**

Wood product manufacturing, NAICS code 321

Paper manufacturing, NAICS code 322

Furniture and related products manufacturing, NAICS code 337

**Additional information came from:** *New York State Forest Industry, An Economic Overview*. 2014. Cavo, Mariela, John Wagner, and David Newman, SUNY College of Env. Sci. & Forestry, Syracuse NY.

Additional regional information comes from observations by the author and material included in sources such as Thompson, J.H. *Geography of New York State*. Syracuse University Press, 1966 and Stout, N.J. *Atlas of Forestry in New York*. Bulletin 41, New York State College of Forestry, Syracuse New York.

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