



Forests of New York, 2015

This resource update provides an overview of the forest resources in New York based on inventories conducted by the U.S. Forest Service, Forest Inventory and Analysis (FIA) program of the Northern Research Station. Estimates are based on field data collected using the FIA annualized sample design and are updated yearly.¹ (See footnote on page 4). Information about the national and regional FIA program is available online at <http://fia.fs.fed.us>. Since 2002, FIA has implemented an annual inventory in New York. For the 2015 inventory, estimates for current variables such as area, volume, and biomass are based on 4,766 plot samples collected from 2009-2015. Change variables such as net growth, removals, and mortality are based on 4,567 plots collected in 2005-2009 and remeasured in 2009-2015. Estimates from earlier annual and periodic inventories are shown for comparison. See Bechtold and Patterson (2005) and O'Connell et al. (2014) for definitions and technical details.

Overview

New York's forest land area totals 18.9 million acres and occupies 63 percent of the State's land area (Table 1). Since completion of the first cycle of annual plots in 2008, there has been little change in forest area (Fig. 1). Eighty-three percent of New York's forest land, 15.7 million acres, is classified as timberland, 3.2 million acres is classified as reserved, and an additional 36,000 acres as forest land low in productivity not include in reserve acreage. The most recent inventory shows the net volume of trees on forest land and timberland continued to increase, and annual growth continued to outpace annual removals. Annual mortality of growing-stock trees on timberland averaged 0.9 percent of the current inventory. This was the same mortality rate as found during the 1993, 2007, and 2012 inventories (Widmann et al. 2012).

Table 1.—New York forest statistics, 2015 and 2010. Volumes are for trees 5-inch diameter and larger. Numbers of trees and biomass are for trees 1-inch diameter and larger. Sampling errors in tables in this report represent 68 percent confidence intervals.

	2015 Estimate	Sampling error (percent)	2010 Estimate	Sampling error (percent)	Change since 2010 (percent)
Forest Land					
Area (thousand acres)	18,887	0.6	18,864	0.7	0.1
Number of live trees (million trees)	12,059	1.3	12,058	1.3	0.0
Aboveground biomass of live trees (thousand oven-dry tons)	1,148,623	0.9	1,098,985	1.0	4.5
Net volume of live trees (million ft ³)	42,075	1.0	40,238	1.1	4.6
Annual net growth of live trees (thousand ft ³ /yr)	741,217	3.1	725,535	3.8	2.2
Annual mortality of live trees (thousand ft ³ /yr)	475,537	3.4	490,082	3.7	-3.0
Annual harvest removals of live trees (thousand ft ³ /yr)	259,845	8.3	309,152	8.9	-15.9
Annual other removals of live trees (thousand ft ³ /yr)	21,083	36.5	26,661	45.2	-20.9
Timberland					
Area (thousand acres)	15,696	0.7	15,702	0.8	0.0
Number of live trees (million trees)	9,550	1.4	9,641	1.5	-0.9
Aboveground biomass of live trees (thousand oven-dry tons)	927,907	1.1	885,543	1.2	4.8
Net volume of live trees (million ft ³)	33,887	1.2	32,330	1.3	4.8
Net volume of growing-stock trees (million ft ³)	30,135	1.2	29,306	1.4	2.8
Annual net growth of growing-stock (thousand ft ³ /yr)	613,857	2.5	599,407	3.3	2.4
Annual mortality of growing-stock trees (thousand ft ³ /yr)	257,602	4.3	271,498	4.8	-5.1
Annual harvest removals of growing-stock trees (thousand ft ³ /yr)	210,268	8.5	254,506	9.0	-17.4
Annual other removals of growing-stock trees (thousand ft ³ /yr)	31,078	28.2	40,892	32.9	-24.0



Forest Area

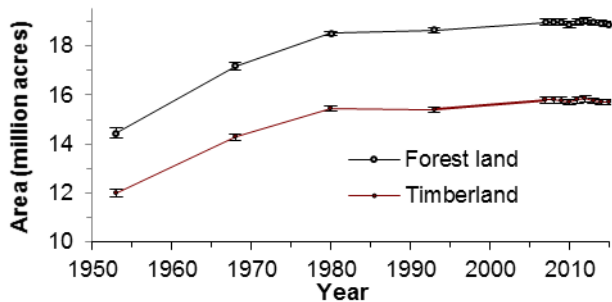


Figure 1.—Forest land and timberland by year, New York. Error bars in figures in this report represent 68-percent confidence intervals around the mean.

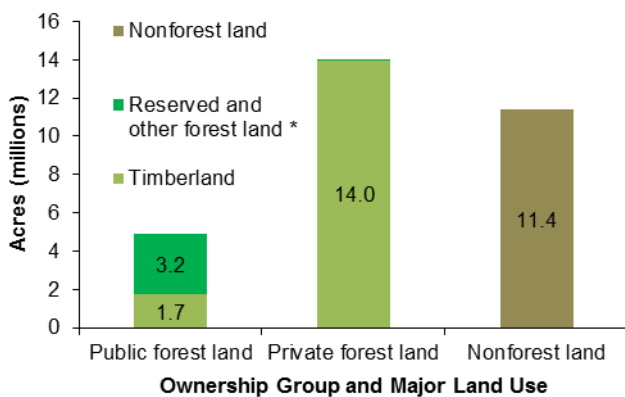


Figure 2.—Land area by major use and major ownership category, New York, 2015. *Reserved applies only to public forest land; 36,000 acres of private forest land are classified as other forest land.

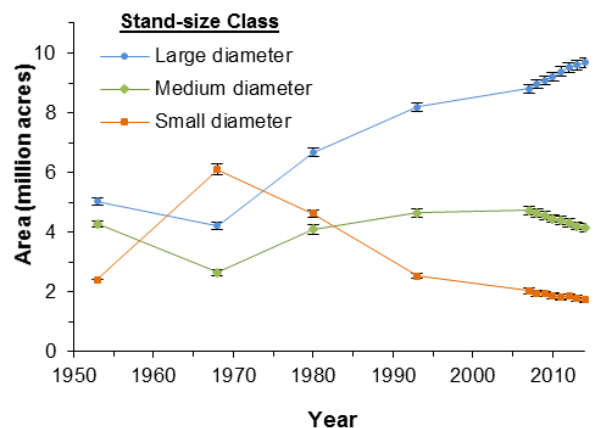


Figure 3.—Timberland by stand-size class and year, New York.

Successive inventories have shown forest land area stable since 2007 (Fig.1). Historically (1952-2012), forest land lost to development has been offset by gains in forest land because of abandoned farm land reverting to forest. Recent changes in forest land reflect the continued development of forest land to nonforest uses and a slowing in farm land losses. Although annual changes in total forest land have been small and within the range of sampling error, decreases in forest land area since 2012 may indicate that the area of forest land in New York has peaked. Future changes in forest land will depend on the pace of land development and to a great extent on the economics of farming.

Seventy-six percent of New York's forests are privately owned (14.0 million acres) (Fig. 2). These ownerships include families and individuals, corporations, and other private entities. The remaining 24 percent (4.9 million acres) is in public ownership. The largest public owner is the State, which holds 1.1 million acres of timberland and 3.0 million acres of reserve forest land.

New York's forests have been maturing as can be seen in the distribution of timberland by stand-size classes² (Fig. 3). Since the 1968 inventory, acreage of large diameter stands has been increasing and the area of medium and small diameter stands has been decreasing. Acreage in large diameter stands now accounts for 63 percent of timberland, whereas the area in medium diameter stands is 26 percent and in small diameter stands is 10 percent.

Ninety percent of New York's forests are composed of hardwood forest-type groups. The maple/beech/birch forest-type group occupies 55 percent of forest land and the oak/hickory group occupies 17 percent (Fig. 4). Since the 2007 inventory, the proportion of forest land occupied by these groups has changed by less than 1 percent.

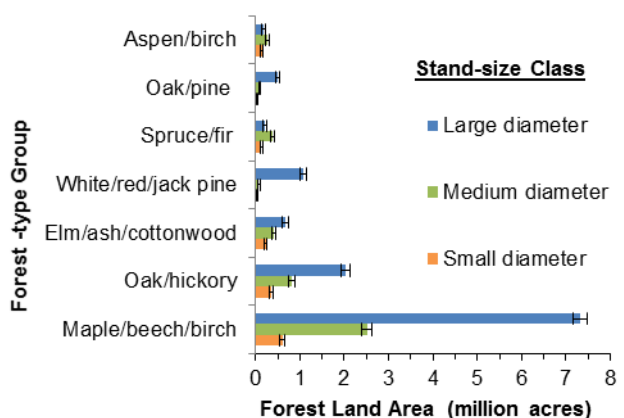


Figure 4.—Forest land by stand-size class (based on small, medium, and large trees)² for top seven forest-type groups in acres, New York, 2015.

Volume, Biomass, and Trends

Across all forest land, the net volume of trees increased by 4.6 percent to 42.1 billion cubic feet. Red maple continued to be the most voluminous species followed by sugar maple, white pine, and hemlock (Table 2). Changes in volume since 2010 were inconsistent across species. While all major species exhibited increases in net volume, northern red oak and white pine had the largest increases, 11.8 and 10.5 percent, respectively. Yellow birch and beech had the smallest increases, 0.8 and 1.2 percent respectively.

Sawtimber volume on timberland increased by 6.9 percent to 96.7 billion board feet. Sugar maple is the leading sawtimber species by volume, followed by white pine, red maple, and northern red oak. Since 2010, northern red oak and white pine had the largest increases in board foot volume, 18.0 and 13.2 percent, respectively. American beech and yellow birch were the only major species to decrease in sawtimber volume, 12.5 and 0.1 percent, respectively.

Aboveground biomass on forest land totaled 1.1 billion dry tons. This was a 4.5 percent increase since 2010. On timberland, aboveground biomass, averaged 59 dry tons per acre, for all live trees 1 inch and larger in diameter. Sixty-two percent is in the merchantable boles of growing-stock trees with the remainder in rough and rotten trees, and the upper stems and limbs of growing stock trees.

In terms of average annual growth and removals of net volume on timberland, red maple experienced the largest annual net growth in volume, and sugar maple had the largest removals (Fig. 5). Together, red and sugar maples account for 27 percent of both net growth and removals. Total annual net growth outpaced total removals by a ratio of 2.3:1, although ratios varied considerably between species. Red maple had a growth to removals ratio of 3.3:1, whereas the ratio for sugar maple was 1.6:1. As a percentage of current net volume, annual mortality averaged 1.1 percent on timberland. Of the major species beech and white ash had the highest annual mortality rates, respectively averaging 1.8 and 1.5 percent per year.

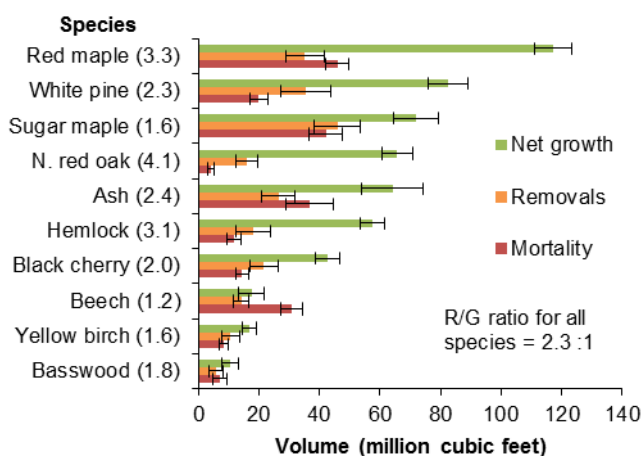


Figure 5.—Average annual net growth, removals, and mortality of net volume on timberland, and growth to removals ratios (G:R) in parentheses, New York, initial measurement 2005-2009 and remeasured 2009-2015.

Table 2.— Net volume, and percent change in net volume on forest land; sawtimber volume and percent change on timberland, and biomass on forest land, New York, 2015, (top 10 species by net volume)

Species	Volume of live trees on forest land (million ft ³)	Sampling error (percent)	Percent change since 2010	Volume of sawtimber trees on timberland (million bdf)	Sampling error (percent)	Percent change since 2010	Aboveground biomass on forest land (million tons)	Sampling error (percent)
Red maple	6,606	2.6	4.4	12,088	4.0	1.4	181	2.5
Sugar maple	6,392	3.0	2.6	13,308	4.4	4.2	204	2.9
White pine	3,411	5.7	10.5	12,180	6.4	13.2	60	5.6
Hemlock	3,258	4.9	8.4	7,370	6.2	9.6	62	4.8
White ash	2,494	4.1	2.9	5,965	5.7	5.8	77	3.9
Beech	2,421	3.8	1.2	3,236	7.2	-12.5	83	3.5
Northern red oak	2,358	5.3	11.8	8,674	6.3	18.0	76	5.3
Black cherry	2,172	5.2	3.8	5,967	7.0	6.8	56	5.0
Yellow birch	2,004	4.5	0.8	2,122	8.6	-0.1	61	4.3
Red spruce	1,104	6.8	4.7	1,020	12.2	0.2	21	6.3
Other softwoods	2,264	6.1	-0.7	4,948	9.4	3.2	44	6.4
Other hardwoods	7,592	2.7	4.8	19,776	4.0	9.7	225	2.8
All Species	42,075	1.0	4.6	96,654	1.7	6.9	1,149	0.9

Most Cut Stands Retain Large Volumes of Wood

Cutting activity in New York's forest impacts the composition, structure, and health of the future forest. Cutting activity is defined as a stand treatment that covers an acre or more, but excludes stands with occasional stumps of unknown origin or sparse removals for firewood. Cutting was observed on 1.1 million acres of timberland in New York during the latest measurement period. This was an average of 220,000 acres per year receiving treatment, equal to 1.4 percent of timberland. Stands where cutting was observed retained an average volume of 2,014 cubic feet per acre of net live volume. This compares to 2,173 cubic feet per acre for stands where no cutting was observed. An average of 163 cubic feet per acre was removed.

In the majority of stands where cutting was observed (82 percent), the stand-size class remained the same as previously measured, and in only 6 percent was the stand size reduced to the sapling/seedling/nonstocked class (Table 3). Additionally, 87 percent of cut stands retained at least a medium level of live-tree stocking. Seventy-nine percent of cut volume came from trees in the 12 inch and larger class diameter classes. In cut stands, 85 percent of growth occurred on previously measured trees (accretion) and 15 percent was on ingrowth (new trees that reach the 5-inch threshold for volume measurement). This means that on average, cutting

activity appears to be a level comparable to a thinning rather than a stand-initiation harvest.

To summarize, most harvests were light, stands retained a large volume of residual trees, and cutting infrequently reduced stand to an early succession stage of development. This will likely lead to continuation of the decline in small diameter stands (Fig. 3). These light harvests influence future growth, species composition, and wildlife habitat. Future growth will continue to be dominated by accretion of residual trees filling canopy gaps, rather than on the ingrowth of new trees. Regeneration will favor more shade-tolerant species at the expense of shade intolerant species. This places increased importance on practicing good forest management that will retain quality trees for the future, as most growth is occurring on trees left behind after harvesting with little ingrowth of new trees.

Table 3.—Area of timberland with observed cutting activity by current and previous stand-size class, New York, 2015. Average years between previous and current measurements was 5.1 years

		Current Stand-size Class			
		Sawtimber	Poletimber	Sapling/Seedling/ Nonstocked	Total
				Area (thousands of acres of timberland)	
Previous Stand-size Class	Sawtimber	711	75	56	842
	Poletimber	43	199	14	256
	Sapling/Seedling/ Nonstocked	3	0	8	12
	Total	760	274	78	1,109

¹One-fifth of the plots were measured annually from 2007 thru 2013 resulting in a complete set of samples for every 5 years of data collection. In 2014, this 5-year cycle was changed to 7 years, wherein 1/7th (14.3 percent) of the plots are measured annually.

² Small diameter stands (sapling/seedling): dominated by trees less than 5.0 inches d.b.h.; Medium (poletimber): 5.0 to 8.9 inches d.b.h. for softwoods and 5.0 to 10.9 inches d.b.h. for hardwoods; Large (saw timber): ≥ 9.0 inches for softwoods and 11.0 d.b.h. for hardwoods.

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Contact Information

Richard H. Widmann, Forester
USDA Forest Service, Northern Research Station
11 Campus Blvd. Suite 200
Newtown Square, PA 19073
Ph: 610-557-4051 / Fax: 610-557-4051
rwidmann@fs.fed.us
Northern FIA: <http://nrs.fs.fed.us/fia/>
National FIA: <http://fia.fs.fed.us>

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