Forests of
Connecticut, 2015

This report provides an overview of forest resources in Connecticut based on an inventory 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. Results are for the measurement years 2010-2015 with comparisons made to 2005-2010[1] (see footnote on bottom of page 2). Forest resource measurements were taken on 324 plots with about 20 percent of the plots measured each year. Estimates will be updated and published annually.

For core tables and more information, including definitions and technical details, please refer to the inventory citations on page 4 of this report or visit http://fia.fs.fed.us.

Overview

As of 2015, Connecticut has an estimated 1.8 million acres of forest land (Table 1). The forest land area has slightly increased since 2010. The estimated number of live trees on Connecticut's forest land in 2015 is 806 million trees containing a total aboveground biomass of 135 million tons. The estimated volume of trees, ≥ 5 inch diameter at breast height, is 4.7 billion ft^3. The estimated annual net growth of these trees is 124 million ft^3/yr with annual mortality, harvest removals, and other removals, such as land clearing, of 27, 20, and 3 million ft^3/yr, respectively.

Table 1.—Connecticut forest statistics, 2005-2010 and 2010-2015

	2010 Estimate	Sampling error (percent)	2015 Estimate	Sampling error (percent)	Change since 2010 (percent)
Forest Land					
Area (thousand acres)	1,687.3	2.7	1,807.7	2.3	7.1
Number of live trees ≥1 in diameter (million trees)	769.2	5.0	805.9	4.6	4.8
Live tree aboveground biomass (thousand oven-dry tons)	121,348.2	3.4	134,911.8	2.9	11.2
Net volume live trees ≥5 in diameter (million ft³)	4,172.3	3.6	4,650.6	3.2	11.5
Net growth live trees ≥5 in (thousand ft³/yr)	95,042.6	9.3	124,148.1	9.3	30.6
Annual mortality of live trees ≥5 in (thousand ft³/yr)	30,221.1	19.7	27,063.8	14.1	-10.4
Annual harvest removals of live trees ≥5 in (thousand ft³/yr)	17,516.8	43.4	19,805.2	29.9	13.1
Annual other removals of live trees ≥5 in (thousand ft³/yr)	5,956.0	63.3	3,188.2	67.8	-46.5
Timberland					
Area (thousand acres)	1,650.6	2.9	1,771.3	2.4	7.3
Number of live trees ≥1 in diameter (million trees)	750.9	5.2	790.4	4.8	5.3
Live tree aboveground biomass (thousand oven-dry tons)	119,108.3	3.6	132,481.6	3.1	11.2
Net volume live trees ≥5 in diameter (million ft³)	4,099.1	3.8	4,567.0	3.3	11.4
Net volume of growing stock trees (million ft³)	3,776.7	3.9	4,177.6	3.5	10.6
Net growth live trees ≥5 in (thousand ft³/yr)	85,278.2	9.4	101,687.2	9.3	19.2
Annual mortality of live trees ≥ 5 in (thousand ft³/yr)	21,181.7	22.5	17,235.6	18.0	-18.6
Annual harvest removals of live trees ≥5 in (thousand ft³/yr)	13,879.3	45.5	15,401.6	32.3	11.0
Annual other removals of live trees ≥5 in (thousand ft³/yr)	4,475.1	65.0	2,690.6	67.6	-39.9

Forest Area

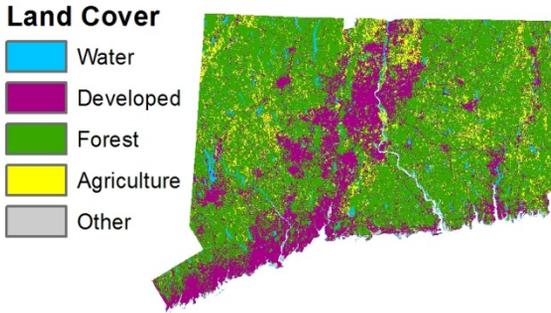**Figure 1.—Forest and other land cover, Connecticut, 2011.**
Source: National Land Cover Database (Jin et al. 2013)

Figure 2.—Area of forest land and timberland, Connecticut, 1952 to 2015.

Note: Sampling errors and error bars shown in the tables and figures in this report represent 68 percent confidence intervals for the estimated values.

An estimated 58 percent of the land area of Connecticut meets the FIA definition of forest land. This forest land is not evenly distributed across the State (Fig. 1). The distribution is largely determined by development patterns and, to a lesser extent, arable lands. If left alone, most land in the State would naturally revert to forest. Areas along the highly populated Interstate-95 and Interstate-91 corridors have the lowest occurrences of forest land.

The area of forest land in Connecticut has decreased from an estimated 2.0 million acres of in 1952, the first year FIA started collecting data in the State, to an estimated 1.8 million acres in 2015, the nominal year of the most recent inventory results (Fig. 2). The general decrease from the earliest estimates is presumably due to increased development. The forest land estimates show a slight increase between 2010 and 2015 and FIA will continue to monitor this trend to see if economic or other factors may be allowing increased reversion of nonforest land to forest land.

There have been relatively few stand-replacing events over the past few decades and this has resulted in the percentage of the forest land that is in the largest stand-size class[2] steadily increasing (Fig. 3). This has important implications for forest resilience (i.e., the ability of the forests to withstand severe weather events or insect infestations), wildlife habitat, and other ecological functions.
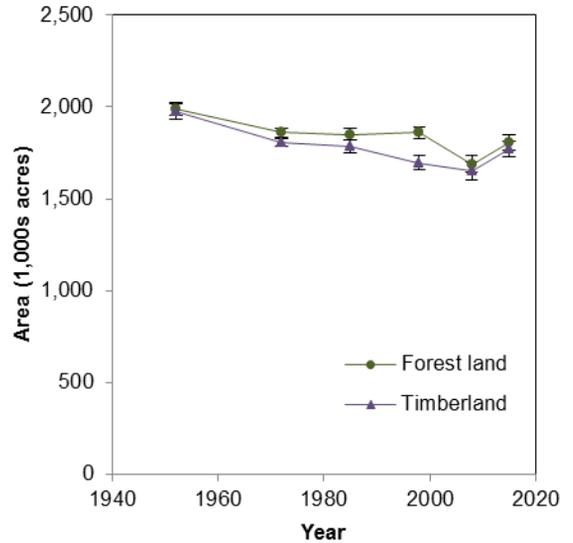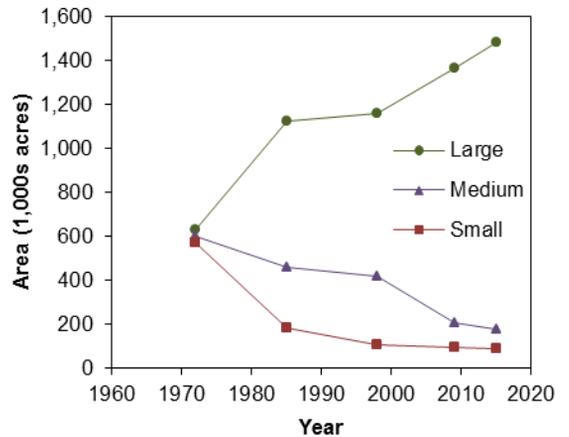

Figure 3.—Area of timberland by stand-size class[2], Connecticut , 1972-2015.

[1]One-fifth of the plots were measured annually from 1999 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 of the plots are measured annually. The complete set of plots will be retained. All inventory estimates (both current and change) will continue to be based on the most recent measurements and remeasurements taken on these plots.

[2]Small: dominated by trees less than 5.0 inches diameter at breast height (d.b.h.); Medium: dominated by trees 5.0 to 8.9 inches d.b.h. for softwoods and 5.0 to 10.9 inches d.b.h. for hardwoods; Large: dominated by trees ≥9.0 inches for softwoods and 11.0 inches d.b.h. for hardwoods.

Forest Composition

There are many different ways to characterize the composition of forests; three are presented here: forest-type groups, volume, and numbers of stems. Each provides a somewhat different view of the resource and there are many other potential metrics that can be examined.

Forest-type groups are amalgamations of forest types which are based on the plurality of trees within the plot/condition. In Connecticut, oak/hickory is by far the most common forest-type group, representing 71 percent of the State's forest land (Fig. 4). In Connecticut, this group is indeed dominated by oaks, northern red, black, white, and scarlet oaks in particular, but it also includes substantial amounts of red maple, sweet birch, white ash, hemlock, and beech.
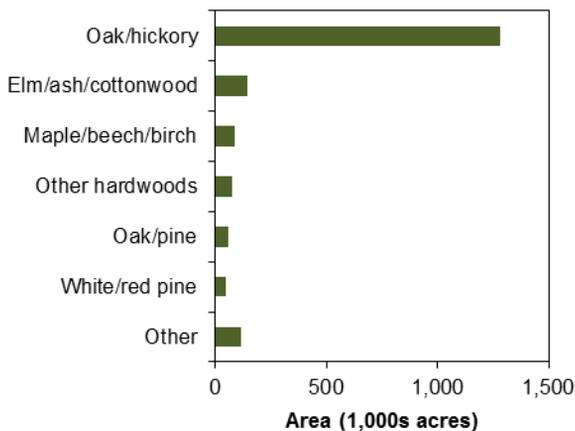
The forests of Connecticut contain a wide variety of tree species, with 58 species observed on the FIA plots inventoried between 2010 and 2015. In terms of total volume (Table 2) and number of trees (Fig. 5), red maple is the most common tree in the State. This species accounts for an estimated 21 percent of the volume and 25 percent of the number of trees. Ranking of the next most common species varies depending on whether volume or number of trees are examined, but includes a number of oak and birch species, sugar maple, eastern white pine, and eastern hemlock. Collectively, the 10 most common tree species account for 81 percent of the volume of live trees and 75 percent of the number of trees in the State.
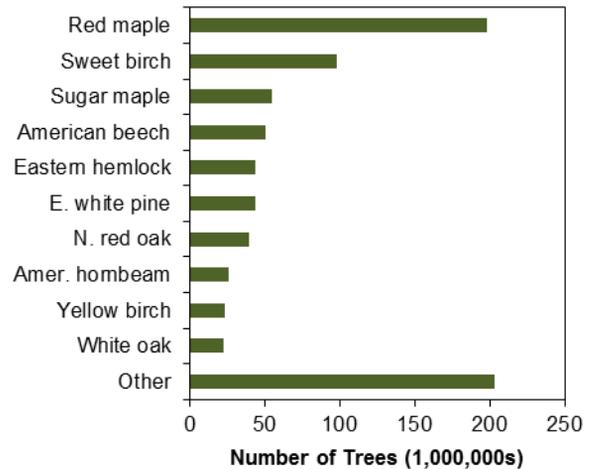

Figure 4.—Area of forest land by forest-type group, Connecticut, 2010-2015.

Figure 5.—Number of trees ≥1 in diameter by species, Connecticut , 2010-2015.

Table 2.—Top 10 trees species by volume estimates, Connecticut, 2010-2015

Rank	Species	Volume of live trees on forest land (million ft³)	Sampling error (%)	Change since 2010 (%)	Volume of sawtimber trees on timberland (million board ft)	Sampling error (%)	Change since 2010 (%)
1	Red maple	964.0	7.9	10.4	2,546.6	10.4	14.7
2	Northern red oak	647.0	9.5	10.9	2553.6	10.2	12.9
3	Black oak	430.3	11.6	25.6	1,813.3	12.9	31.7
4	Sweet birch	326.6	9.5	9.6	763.4	14.0	13.4
5	Eastern white pine	324.3	18.1	19.1	1,345.1	21.5	18.6
6	White oak	279.1	10.6	4.1	1044.6	12.3	7.0
7	Eastern hemlock	219.4	17.6	4.2	619.0	20.4	8.9
8	White ash	206.7	16.2	4.3	745.0	20.6	2.3
9	Sugar maple	196.0	15.3	6.2	568.5	20.0	4.6
10	Scarlet oak	166.0	15.7	8.0	610.8	15.8	19.1
	Other softwoods	39.8	34.9	*	109.2	*	34.3
	Other hardwoods	851.3	8.2	*	2899.4	*	18.5
	All species	4,650.6	3.2	11.5	15,618.4	4.4	15.5

* Due to potential differences in the lists of top 10 species for the two time periods, changes in other softwoods and other hardwoods are not reported.

Timber Removals Across Southern New England

Across Connecticut, Massachusetts, and Rhode Island, collectively referred to as Southern New England, an estimated 63 million cubic feet of wood is being removed annually. Most of this wood, 86 percent, is being removed due to harvesting, including both commercial and non-commercial purposes, such as firewood harvesting. The remaining 14 percent of the removals are due primarily to land use conversions. The overall growth to removals ratio is 5:1 indicating the region is producing five times more wood than is being harvested.

Looking just at the wood being removed for harvesting, most of it is coming from a relatively few species and fairly narrow diameter-size class. Across the region, northern red oak, red maple, and eastern white pine are the dominant species being harvested (Fig. 6). Most of the trees being harvested range in diameter from 10 to 19 inches (Fig. 7). These harvesting patterns are related to relative abundance of species, preferences for certain species for timber and firewood, and harvesting practices.
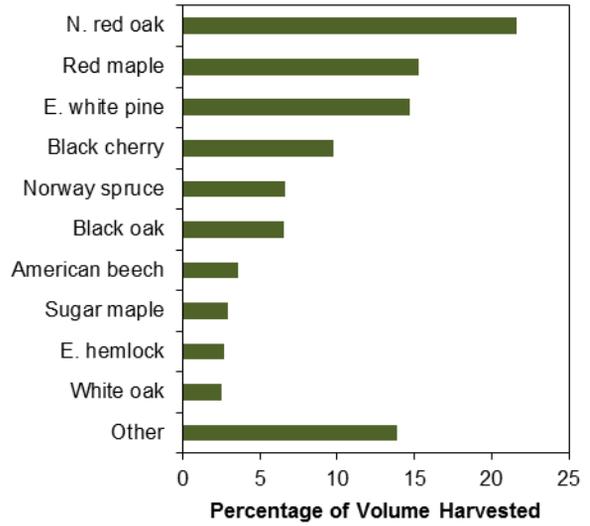

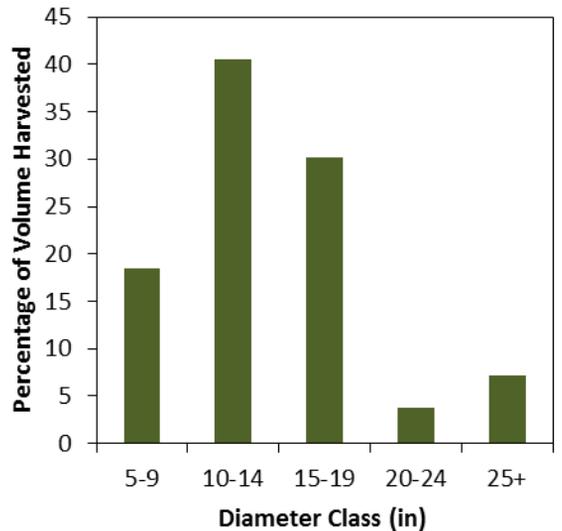**Figure 6.—Percentage of volume harvested by species, Southern New England, 2015.**

Figure 7.—Percentage of volume harvested by diameter class, Southern New England, 2015.

Literature Cited

Bechtold, W.A.; Patterson, P.L., eds. 2005. **The enhanced Forest Inventory and Analysis program: national sampling design and estimation procedures**. Gen. Tech. Rep. SRS-80. Asheville, NC: U.S. Department of Agriculture, Forest Service, Southern Research Station. 85 p.

Jin, S.; Yang, L.; Danielson, P.; Homer, C.; Fry, J.; Xian, G. 2013. A comprehensive change detection method for updating the National Land Cover Database to circa 2011. **Remote Sensing of Environment.** 132:159-175.

O'Connell, B.M.; LaPoint, E.B.; Turner, J.A.; Ridley, T.; Boyer, D.; Wilson, A.M.; Waddell, K.L.; Pugh, S.A.; Conkling, B.L. 2014. **The Forest Inventory and Analysis database: database description and users manual version 5.16 for Phase 2.** Washington, DC: U.S. Department of Agriculture, Forest Service. 564 p.

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