



Forests of Connecticut, 2016

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 2011-2016 with comparisons made to 2007-2011* (see footnote on bottom of page 2). Forest resource measurements were taken on 320 plots with about 14 percent of the plots measured each year. Growth, mortality, and removals statistics are based on 300 remeasured plots. Estimates are 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>. A complete set of inventory tables is available at <https://doi.org/10.2737/FS-RU-130>.

Overview

Connecticut has an estimated 1.8 million acres of forest land (Table 1). The forest land area has slightly increased since 2011. The estimated number of live trees on Connecticut’s forest land in 2016 is 799 million trees containing a total aboveground biomass of 136 million tons. The estimated volume of trees, ≥ 5 inches diameter at breast height, is 4.7 billion ft^3 . The estimated annual net growth of these trees is 116 million ft^3/yr with annual mortality, harvest removals, and other removals, such as land clearing, of 28, 18, and <1 percent of net growth, respectively.

Table 1.—Connecticut forest statistics, 2007-2011 and 2011-2016. Sampling errors and error bars shown in the tables and figures in this report represent 68 percent confidence intervals for the estimated values.

	2011 Estimate	Sampling error (percent)	2016 Estimate	Sampling error (percent)	Change since 2011 (percent)
Forest Land					
Area (thousand acres)	1,711.7	2.7	1,799.9	2.3	5.2
Number of live trees ≥ 1 inch diameter (million trees)	784.6	5.0	799.4	4.9	1.9
Live tree aboveground biomass (thousand oven-dry tons)	124,171.7	3.3	135,690.9	3.0	9.3
Net volume live trees ≥ 5 inches diameter (million ft^3)	4,264.4	3.5	4,679.1	3.2	9.7
Net growth live trees ≥ 5 inches (thousand ft^3/yr)	98,500.9	8.3	116,181.1	9.8	17.9
Annual mortality of live trees ≥ 5 inches (thousand ft^3/yr)	28,381.5	16.9	32,017.7	12.9	12.8
Annual harvest removals of live trees ≥ 5 inches (thousand ft^3/yr)	17,458.9	39.5	20,858.0	28.4	19.5
Annual other removals of live trees ≥ 5 inches (thousand ft^3/yr)	4,945.9	60.9	1,074.1	58.2	-- ^a
Timberland					
Area (thousand acres)	1,674.2	2.8	1,764.4	2.4	5.4
Number of live trees ≥ 1 inch diameter (million trees)	765.8	5.2	784.4	5.1	2.4
Live tree aboveground biomass (thousand oven-dry tons)	121,866.5	3.5	133,338.3	3.1	9.4
Net volume live trees ≥ 5 inches diameter (million ft^3)	4,189.1	3.7	4,598.1	3.3	9.8
Net volume of growing stock trees (million ft^3)	3,865.2	3.8	4,205.8	3.6	8.8
Net growth of growing stock trees ≥ 5 inches (thousand ft^3/yr)	87,595.9	8.3	95,618.1	9.7	9.2
Annual mortality of growing stock trees ≥ 5 inches (thousand ft^3/yr)	19,102.9	19.9	20,900.5	16.1	9.4
Annual harvest removals of growing stock trees ≥ 5 inches (thousand ft^3/yr)	14,353.2	41.3	16,158.1	30.8	12.6
Annual other removals of growing stock trees ≥ 5 inches (thousand ft^3/yr)	3,775.8	61.9	918.4	59.6	-- ^a

^a Value not included due to small sample size and large variance for associated estimate.



Forest Area

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.

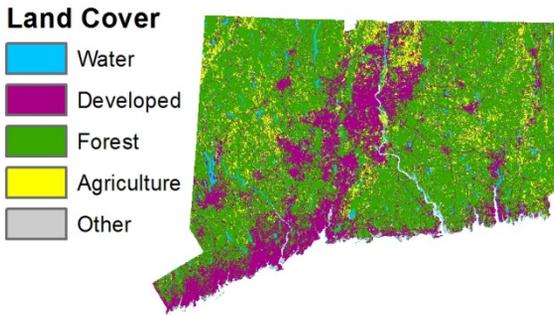


Figure 1.—Forest and other land cover, Connecticut, 2011.
Source: National Land Cover Database (Jin et al. 2013)

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 2016, 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 2011 and 2016, and FIA will continue to monitor this trend.

There have been relatively few stand-replacing events, such as hurricanes or intensive timber harvesting, over the past few decades and this has resulted in the percentage of the forest land that is in the largest stand-size class** 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.

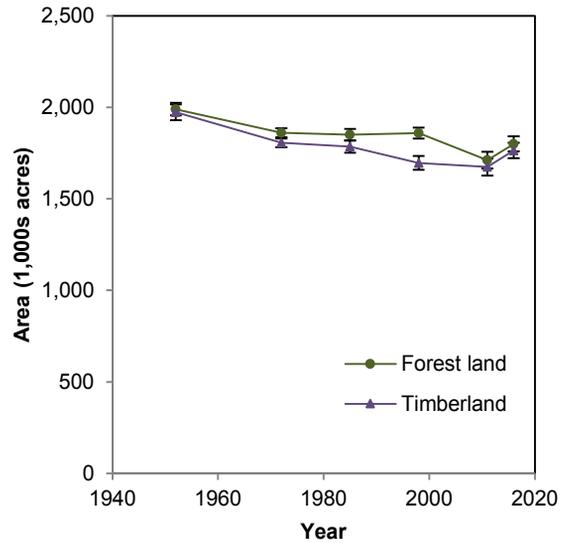


Figure 2.—Area of forest land and timberland, Connecticut, 1952 to 2016.

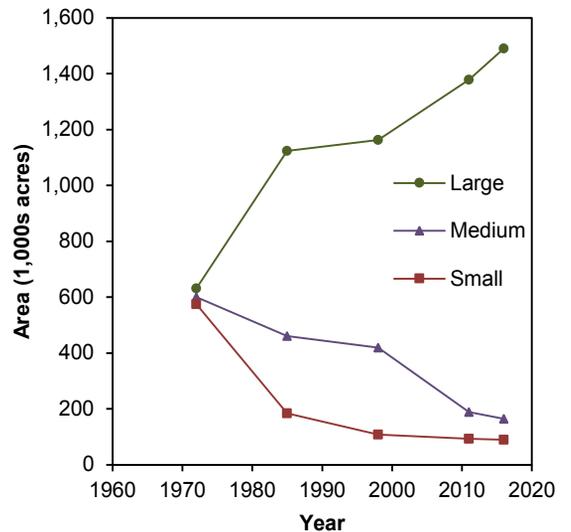


Figure 3.—Area of timberland by stand-size class, Connecticut, 1972-2016.**

*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.

**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 Trends

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 70 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.

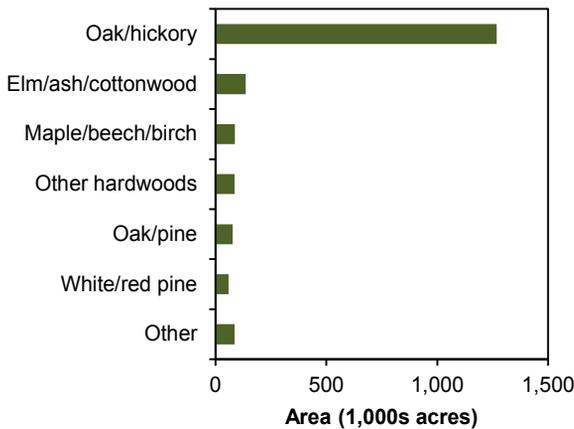


Figure 4.—Area of forest land by forest-type group, Connecticut, 2011-2016.

The forests of Connecticut contain a wide variety of tree species, with 58 species observed on the FIA plots inventoried between 2011 and 2016. 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.

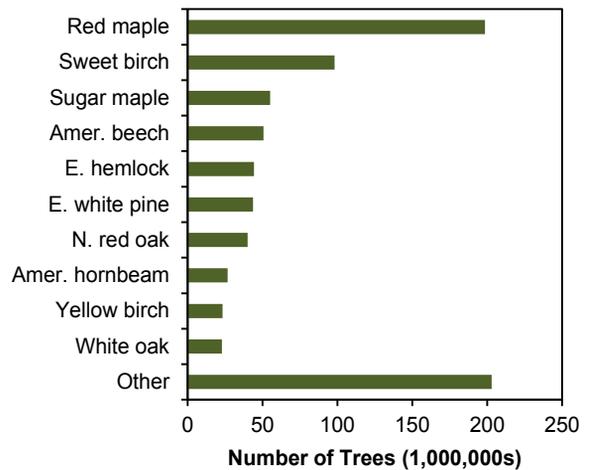


Figure 5.—Number of trees ≥1 inch diameter by species, Connecticut, 2011-2016.

Table 2.—Top 10 trees species by volume estimates, Connecticut, 2011-2016

Rank	Species	Volume of live trees on forest land (million ft³)	Sampling error (%)	Change since 2011 (%)	Volume of sawtimber trees on timberland (million board ft)	Sampling error (%)	Change since 2011 (%)
1	Red maple	968.5	8.0	10.8	2,588.3	10.3	15.2
2	Northern red oak	655.5	9.7	11.1	2,623.6	10.4	15.2
3	Black oak	437.4	11.6	17.4	1,867.3	12.8	22.0
4	Sweet birch	334.5	9.5	8.4	780.3	13.8	9.9
5	Eastern white pine	326.1	18.0	15.9	1,366.0	21.1	17.0
6	White oak	276.0	10.8	-0.1	1034	12.5	0.2
7	Eastern hemlock	220.4	17.8	2.7	629.9	20.3	2.9
8	White ash	206.5	16.4	4.0	753.8	20.6	0.4
9	Sugar maple	197.6	15.4	4.7	575.4	20.3	3.9
10	Scarlet oak	157.8	15.5	-2.5	601.1	16.2	8.0
	Other softwoods	38.9	36.4	26.7	108.0	51.3	32.8
	Other hardwoods	859.8	8.2	12.0	2,946.6	12.1	16.8
	All species	4,679.1	3.2	9.7	15,874.3	4.4	13.0

A Closer Look at Timber Supply: Who Owns the Wood and Who is Harvesting?

Knowing who owns the timber resource, and who is and who is not harvesting, is important for making informed business and policy decisions. Due to small sample size issues, results are presented for Southern New England (i.e., Connecticut, Massachusetts, and Rhode Island). The many commonalities across the ownerships and forests of the region help justify this combination.

Most of the forest land across Southern New England is privately owned with 46 percent of all forest land classified as family forest land (Fig. 6). The distribution of the standing timber volume is similar to the acreage distribution. The relative distribution of timber harvesting reflects differences in ownership objectives and management practices; 56 percent of the removals are from family forest lands.

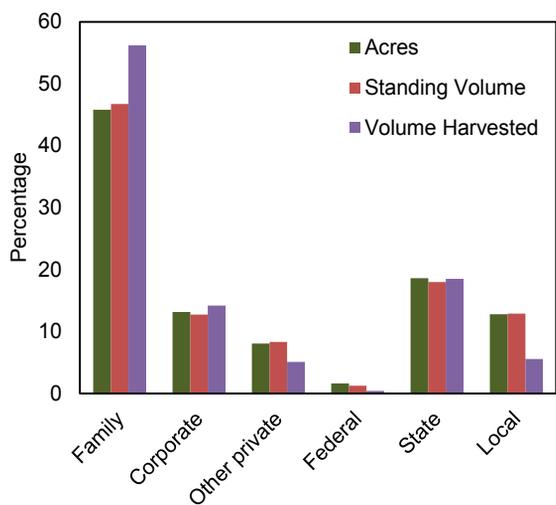


Figure 6.—Percentage of forest land, standing timber volume and annual timber harvest volume by ownership class, Southern New England, 2016.

Using data from the National Woodland Owner Survey (Butler et al. 2016), the 387,000 family forest ownerships (50,000 family forest ownerships with 10+ acres) across the region can be examined in greater detail. Family forest ownerships have a range of size of holdings with 79 percent of the family forest land in holdings less than 100 acres (Fig. 7). But the larger ownerships, those with 100+ acres, contribute a disproportionate 60 percent of the annual timber harvest from family forest lands. Looking at other attributes of family forest ownerships, such as reasons for owning, absentee ownership, owner age, and interactions with forestry professionals (Silver et al. 2015), are also important and should be considered in future examinations of timber harvesters.

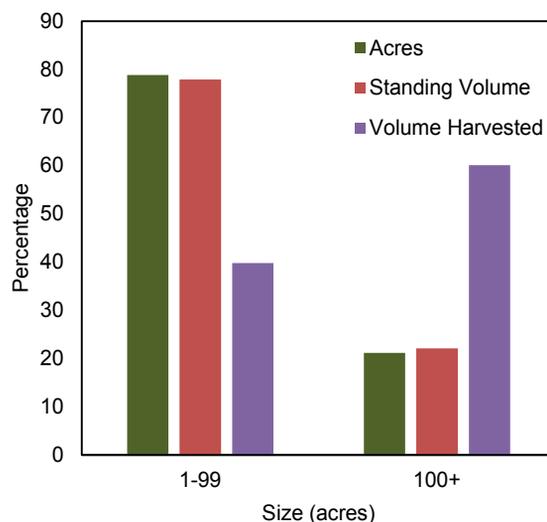


Figure 7.—Percentage of forest land, standing timber volume, and annual timber harvest volume by family forest ownership size class, Southern New England. Plot data: 2012-2016 (remeasured from 2007-2011). NWOS data: 2011-2103.

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