



Forests of Connecticut, 2013

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 2009-2013 with comparisons made to 2003-2007. Forest resource measurements were taken on 320 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 2013, Connecticut has an estimated 1.8 million acres of forest land (Table 1). The forest land area has not substantially changed since 2007. The estimated number of live trees on Connecticut's forest land in 2013 is 819 million trees containing a total aboveground biomass of 132 million tons. The estimated volume of trees, ≥ 5 inch diameter at breast height (d.b.h.), is 4.6 billion ft^3 . The estimated annual net growth of these trees is 115.0 million ft^3/yr with annual mortality, harvest removals, and other removals, such as land clearing, of 24.3, 14.4, and 2.2 million ft^3/yr , respectively.

Table 1.—Connecticut forest statistics, 2003-2007 and 2009-2013

	2007 Estimate	Sampling error (percent)	2013 Estimate	Sampling error (percent)	Change since 2007 (percent)
Forest Land					
Area (thousand acres)	1,703.50	2.6	1,799.3	2.3	5.6
Number of live trees ≥ 1 in diameter (million trees)	807.3	4.7	818.8	4.5	1.4
Live tree aboveground biomass (thousand oven-dry tons)	117,590.8	3.5	132,303.4	2.9	12.5
Net volume live trees ≥ 5 in diameter (million ft^3)	4,043.5	3.7	4,551.0	3.1	12.6
Net growth live trees ≥ 5 in (thousand ft^3/yr)	97,054.5	7.6	114,974.9	6.2	18.5
Annual mortality of live trees ≥ 5 in (thousand ft^3/yr)	25,973.0	14.6	24,302.1	12.4	-6.4
Annual harvest removals of live trees ≥ 5 in (thousand ft^3/yr)	46,888.4	25.5	14,404.6	30.9	-69.3
Annual other removals of live trees ≥ 5 in (thousand ft^3/yr)	1,806.5	58.9	2,210.9	89.2	22.4
Timberland					
Area (thousand acres)	1,642.8	2.9	1,755.4	2.5	6.9
Number of live trees ≥ 1 in diameter (million trees)	780.7	5.0	800.6	4.7	2.5
Live tree aboveground biomass (thousand oven-dry tons)	114,476.5	3.6	129,203.5	3.1	12.9
Net volume live trees ≥ 5 in diameter (million ft^3)	3,936.2	3.8	4,442.2	3.3	12.9
Net volume of growing stock trees (million ft^3)	3,659.1	4.0	4,082.9	3.5	11.6
Net growth live trees ≥ 5 in (thousand ft^3/yr)	83,794.4	7.3	96,247.6	5.9	14.9
Annual mortality of live trees ≥ 5 in (thousand ft^3/yr)	18,267.2	16.9	14,363.3	16.1	-21.4
Annual harvest removals of live trees ≥ 5 in (thousand ft^3/yr)	36,339.6	24.5	11,890.4	32.5	-67.3
Annual other removals of live trees ≥ 5 in (thousand ft^3/yr)	5,787.7	78.3	1,812.9	91.0	-68.7



Forest Area

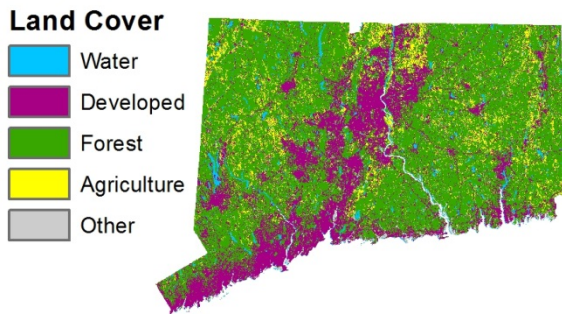


Figure 1.—Forest and other land cover, Connecticut, 2011.
Source: National Land Cover Database (Jin et al. 2013)

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 I-95 and I-91 corridors have the lowest occurrences of forest land.

The area of forest land in Connecticut has decreased from an estimated 1,990,000 acres of in 1952, the first year FIA started collecting data in the State, to an estimated 1,799,000 acres in 2013, 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 in 2007 and 2013 are not substantially different, but FIA will continue to monitor this trend to see if the economic recession 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 class¹ 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.

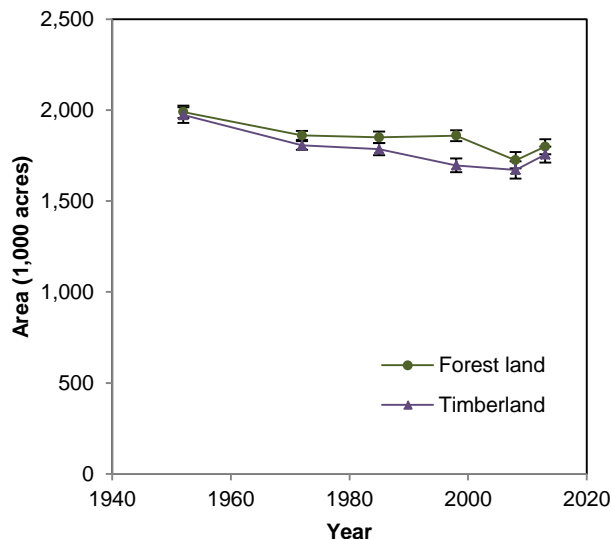


Figure 2.—Area of forest land and timberland, Connecticut, 1952-2013.

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

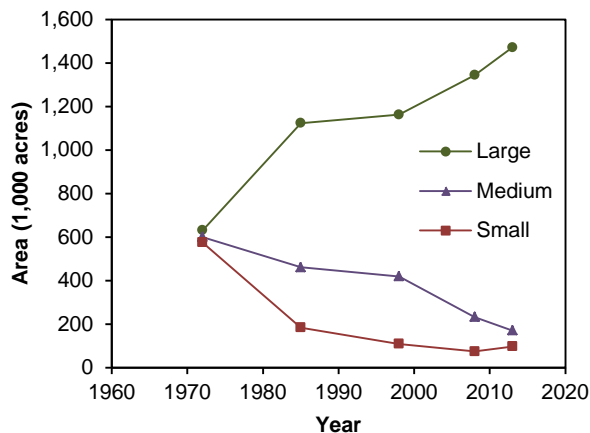


Figure 3.—Area of timberland by stand-size class¹, Connecticut, 1972-2013.

¹Small: dominated by trees less than 5.0 inches 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 72 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 63 species observed on the FIA plots inventoried between 2009 and 2013. 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 ten most common tree species account for 82 percent of the volume of live trees and 75 percent of the number of trees in the State.

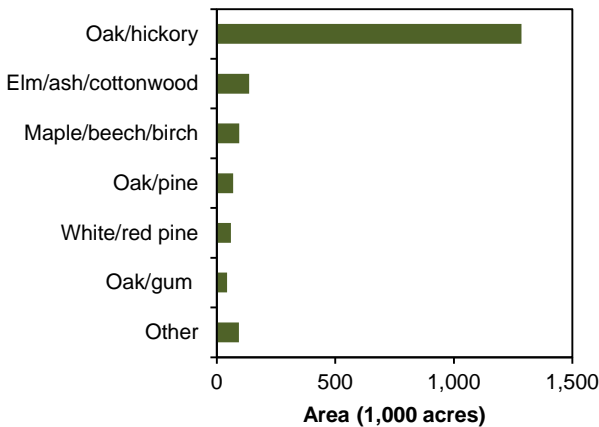


Figure 4.—Area of forest land by forest-type group, Connecticut, 2009-2013.

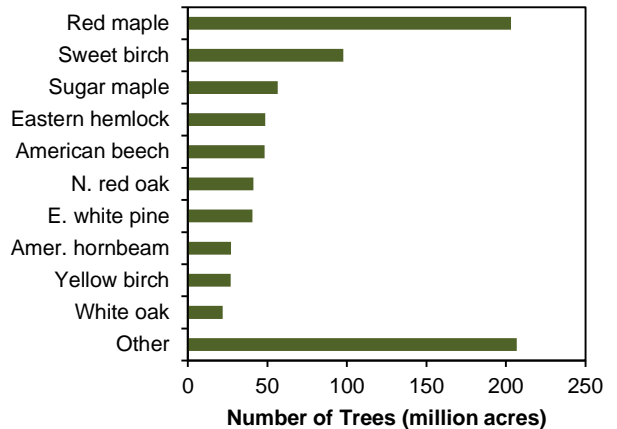


Figure 5.—Number of trees ≥1 in diameter by species, Connecticut, 2009-2013.

Table 2.—Top 10 trees species by volume estimates, Connecticut, 2009-2013

Rank	Species	Volume of live trees on forest land (million ft ³)	Sampling error (%)	Change since 2007 (%)	Volume of sawtimber trees on timberland (million board ft)	Sampling error (%)	Change since 2007 (%)
1	Red maple	949.0	8.0	9.0	2,484.1	10.5	15.2
2	Northern red oak	629.6	9.5	11.8	2,458.4	10.3	16.8
3	Black oak	415.9	11.7	40.4	1,739.2	13.1	57.2
4	Sweet birch	327.9	9.4	18.7	776.6	14.0	27.4
5	Eastern white pine	307.5	18.7	-0.1	1,239.4	22.7	-4.6
6	White oak	279.0	10.4	3.8	1054.8	12.0	14.6
7	Eastern hemlock	225.8	17.3	9.7	635.6	20.0	11.1
8	White ash	212.6	15.6	10.7	774.5	19.1	20.4
9	Sugar maple	201.2	14.9	15.4	609.2	19.4	10.2
10	Scarlet oak	167.9	15.6	1.2	595.5	16.3	18.1
	Other softwoods	39.9	34.9	25.5	108.2	48.3	52.0
	Other hardwoods	794.7	7.7	15.0	2,586.3	11.1	27.9
	All species	4,551.0	3.1	12.6	15,061.8	4.3	19.9

Forest Ownership of Connecticut

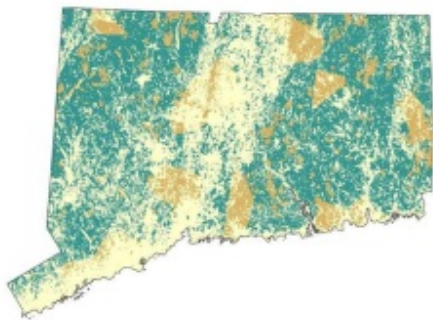


Figure 6.—Private (■) and public (■) forest ownership, Connecticut, 2013 (Hewes et al. 2014)

An estimated 73 percent of Connecticut’s forests are privately owned (Fig. 6). Of these private forests, most are owned by families and individuals, collectively referred to as family forest ownerships. This group accounts for 51 percent of the forest land in the State.

Other private ownerships, including corporate, tribal, conservation groups, and clubs, account for an additional 21 percent of the State’s forest land. Federal, State, and local governments control <1, 17, and 9 percent of the State’s forest land, respectively.

The 2011–2013 National Woodland Owner Survey (NWOS; Butler et al. In preparation) provides insights into the dominant ownership group, family forest ownerships, and focuses specifically on family forest ownerships with 10+ acres of forest land. There are an estimated 18,000 family forest ownerships in Connecticut with 10+ acres of forest land. On average they own 33 acres of forest land. The reasons for owning this land are varied, but most are related to amenity values, such as aesthetics and privacy (Fig. 7). More information will be available in forthcoming NWOS reports (www.fia.fs.fed.us/nwos).

Literature Cited

Bechtold, W.A.; Patterson, P.L. 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. 85p.

Butler, B.J.; Dickinson, B.J.; Hewes, J.H.; Andrejczyk, K.; Markowski-Lindsay, M.; Butler, S.M. In preparation. **Family forests of the United States, 2013: Results from the USDA Forest Service, National Woodland Owner Survey**. Newtown Square, PA: U.S. Department of Agriculture, Forest Service, Northern Research Station.

Hewes, J.H.; Butler, B.J.; Liknes, G.C.; Nelson, M.D.; Snyder, S.A. 2014. **Forest ownership across the conterminous United States: ForestOwn_v2 geospatial dataset**. Newtown Square, PA: U.S. Department of Agriculture, Forest Service, Northern Research Station.

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.; et al. 2013. **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.

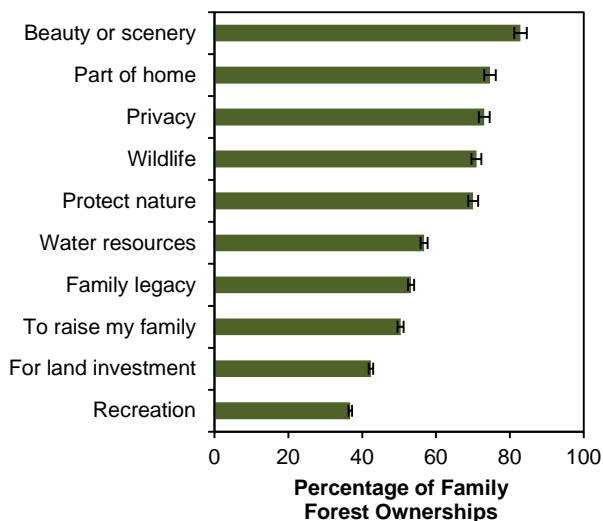


Figure 7.—Reasons for owning* forest land, family forest ownerships with 10+ acres of forest land, Connecticut, 2011-2013. * Many ownerships have multiple reasons for owning.

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