USDA
United States Department of Agriculture

RESOURCE UPDATE FS-128

Forests of Maine, 2016

This publication provides an overview of the forest resources in Maine based upon inventories conducted by the U.S. Forest Service, Forest Inventory and Analysis (FIA) program of the Northern Research Station. Information about the national and regional FIA program is available online at www.fia.fs.fed.us.

Since 1999, FIA has implemented an annual inventory measuring 20 percent of sample plots each year. For the 2016 inventory, estimates for current variables, such as area, volume, and biomass, are based on 3,527 plots inventoried from 2012–2016. Change variables, such as net growth, removals, and mortality, are based on 3,490 plots inventoried in 2007–2011 and resampled in 2012–2016. Estimates from earlier annual and periodic inventories are included for comparison.

See Bechtold and Patterson (2005), Gormanson et al. (2017), and O'Connell et al. (2017) for definitions and technical details.

Additional data and reports are available online (www.nrs.fs.fed.us/fia/data-tools/state-reports/ME/).

Overview

Maine contains an estimated 17.6 million acres of forest land (Table 1). The acreage of forest land has not changed substantially since 2011 and currently covers 89 percent of the land area in the State. Ninety-five percent of the forest land is classified as timberland, meaning that it exceeds a minimum level of productivity and is not legislatively reserved from timber harvesting.

On the forest land in Maine, there are an estimated 24.0 billion live trees that are at least 1 inch in diameter (Table 1). The ratio of net growth to removals of growing-stock trees is 1.4:1. Mortality and removals are down compared to the 2011 estimates.

Table 1.—Maine forest statistics, 2016 and 2011. Volume estimates are for trees 5 inch and larger in diameter. Number of trees and biomass estimates are for trees 1 inch and larger diameter. Sampling errors and error bars shown in tables and figures in this report represent 68-percent confidence intervals.

	2016 Estimate	Sampling error (percent)	2011 Estimate	Sampling error (percent)	Change since 2011 (percent)
Forest Land					
Area (thousand acres)	17,567	0.4	17,660	0.4	-0.5
Number of live trees ≥1 inch diameter (million trees)	24,030	1.5	24,115	1.5	-0.4
Live tree aboveground biomass (thousand oven-dry tons)	707,266	0.9	676,314	1.0	4.6
Net volume live trees ≥5 inches diameter (million ft^3)	27,017	1.2	25,757	1.2	4.9
Net growth live trees ≥5 inches (thousand ft^3/yr)	804,018	1.8	699,571	2.3	14.9
Annual mortality of live trees ≥5 inches (thousand ft^3/yr)	267,326	3.4	314,834	3.0	-15.1
Annual harvest removals of live trees ≥5 inches (thousand ft^3/yr)	575,172	5.5	646,164	5.0	-11.0
Annual other removals of live trees ≥5 inches (thousand ft^3/yr)	4,579	36.7	6,359	52.2	-28.0
Timberland					
Area (thousand acres)	16,752	0.5	17,039	0.5	-1.7
Number of live trees ≥1 inch diameter (million trees)	22,898	1.5	23,314	1.6	-1.8
Live tree aboveground biomass (thousand oven-dry tons)	670,569	1.0	652,554	1.0	2.8
Net volume live trees ≥5 inches diameter (million ft^3)	25,500	1.3	24,794	1.2	2.8
Net volume of growing stock trees (million ft^3)	23,285	1.3	23,293	1.3	0.0
Net growth of growing stock trees ≥5 inches (thousand ft^3/yr)	734,795	1.6	654,477	2.1	12.3
Annual mortality of growing stock trees ≥5 inches (thousand ft^3/yr)	210,364	3.7	235,265	3.3	-10.6
Annual harvest removals, growing stock ≥5 inches (thousand ft^3/yr)	505,543	5.5	571,514	5. 1	-11.5
Annual other removals, growing stock ≥5 inches (thousand ft^3/yr)	9,754	54.5	11,825	50.8	-17.5

Forest Area

Maine's forest land area has been fairly stable since the 1960s although timberland is slightly declining, mostly due to definitional changes (Fig. 1). Privately-owned forest land makes up 89 percent of the forest land area while public ownership, including reserved lands, is around 10 percent of the total forested area (Fig. 2). The remaining 1 percent of forest land is owned by Native American tribes.

Currently, 34, 36, and 30 percent of the timberland in Maine is in large, medium, and small stand sizes, respectively (Fig. 3). Since the spruce budworm salvage operations of the 1980s and 1990s, this distribution has remained fairly constant, but there has been a slight decrease in the smallest size class in recent years, and an increase in the largest size class.

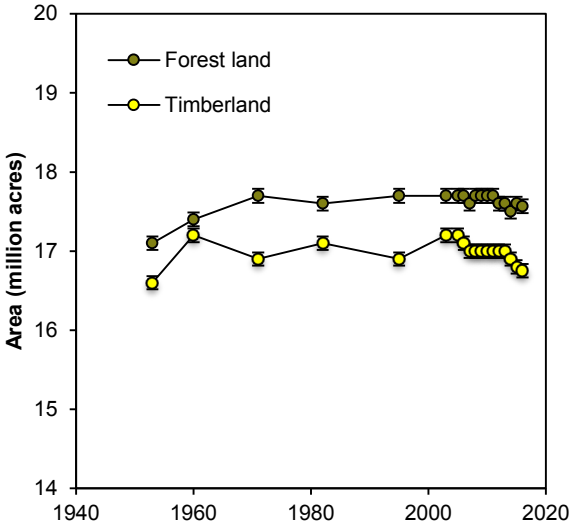

Figure 1.—Area of forest land and timberland, Maine.

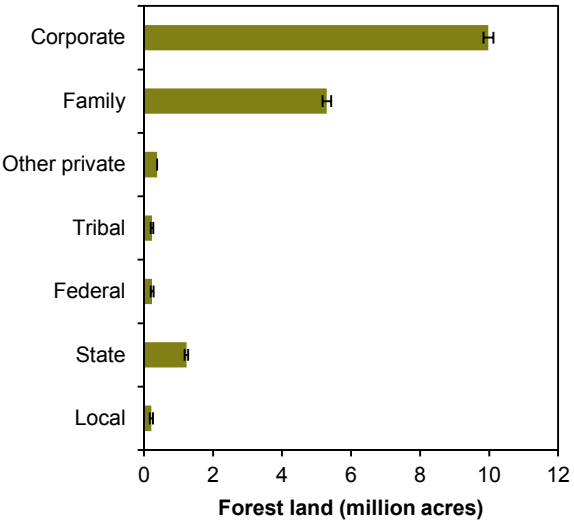

Figure 2.—Area of forest land by ownership group, Maine, 2016.

Three-quarters of the forest land in Maine is in two forest-type groups, maple/beech/birch and spruce fir (Fig. 4). The aspen/birch and white/red/jack pine forest-type groups occupy an additional 11 and 7 percent of the forest land, respectively.

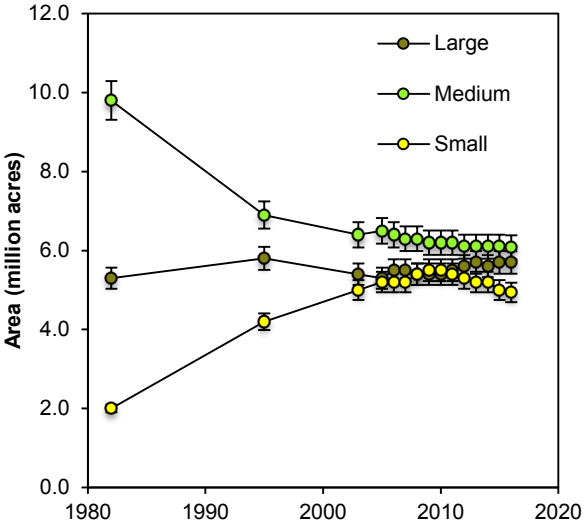

Figure 3.— Area of timberland by stand-size class, Maine.

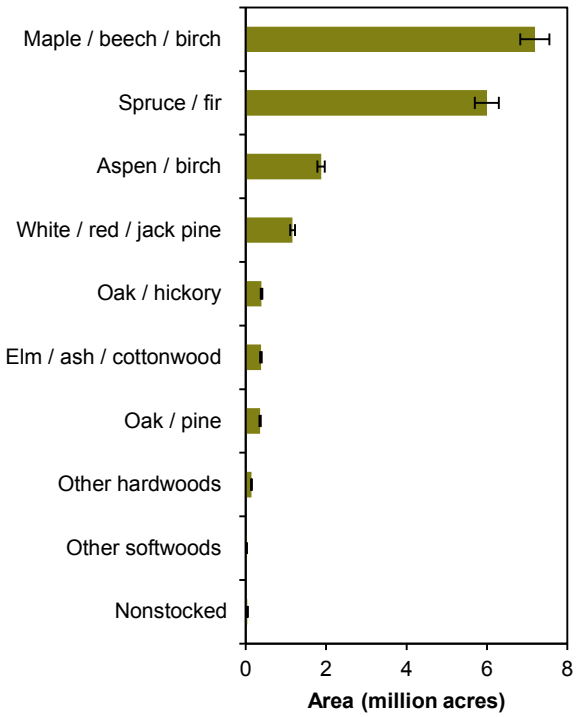

Figure 4.—Area of forest land by forest-type group, Maine, 2016.

Forest Composition Trends

Maine's forests contain a wide variety of tree species with 56 species sampled in 2016. This composition looks different depending on whether the number or volumes of trees are examined.

Red spruce is the most voluminous tree in Maine followed closely by red maple and eastern white pine (Table 2). Collectively, the 10 most voluminous tree species account for 83 percent of the total volume of live trees on forest land in Maine. Of these species, balsam fir, northern red oak, red spruce, and eastern white pine showed the most substantial increases in volume since 2011.

In terms of number of trees, balsam fir is by far the most numerous species in Maine (Fig. 5). With an estimated 8.7 billion stems, this species accounts for 36 percent of the trees in the State. Other common species, all with estimated numbers of stems over 1 billion, include red maple, red spruce, American beech, paper birch, and northern white cedar. The 10 most common species, in terms of numbers of stems, account for 85 percent of the trees in the State.

Red spruce. Photo by Keith Kanoti, Maine Forest Service, Bugwood.org.

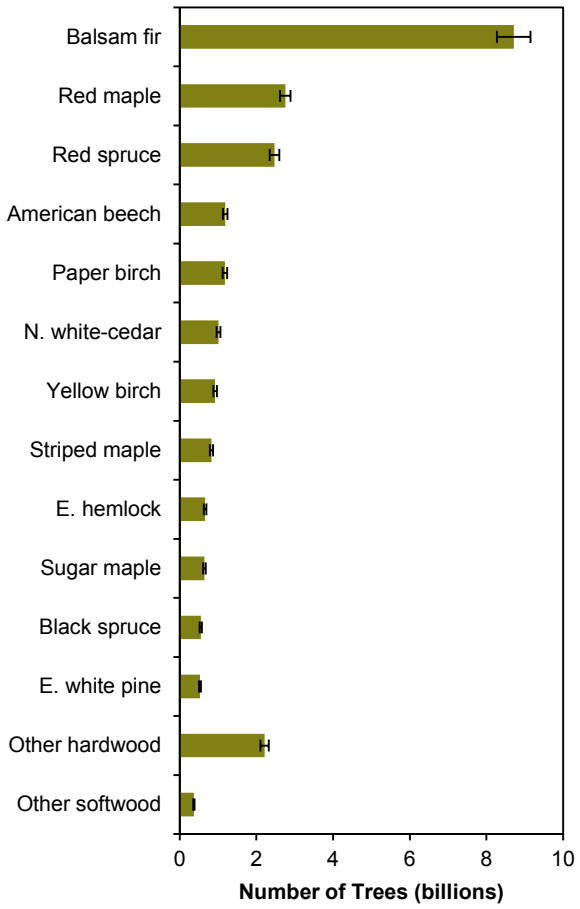

Figure 5.—Number of trees ≥1 inch diameter on forest land by species, Maine, 2016.

Table 2.—Net volume and percent change in net volume on forest land; sawtimber volume and percent change on timberland, Maine, 2016, for the top 10 species by net volume

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 spruce	3,374.8	3.9	10.8	8,087.1	4.9	5.0
2	Red maple	3,254.1	2.8	1.0	4,624.2	5.1	-4.7
3	Eastern white pine	3,107.6	5.0	10.7	10,821.9	5.6	4.9
4	Balsam fir	2,785.5	2.9	20.7	2,866.0	5.0	12.1
5	Northern white-cedar	2,190.6	5.1	-2.0	4,534.2	6.2	-5.8
6	Eastern hemlock	2,035.3	5.1	2.4	5,678.4	6.0	-0.3
7	Sugar maple	1,925.8	5.8	-5.4	4,948.4	7.5	-11.4
8	Yellow birch	1,688.1	3.9	4.1	3,293.9	6.5	-9.9
9	Paper birch	1,126.4	4.4	-0.6	1,011.4	8.4	-12.6
10	Northern red oak	995.2	6.5	13.8	2,835.4	8.2	19.4
	Other softwoods	1,520.9	5.7	4.7	3,494.7	7.6	9.0
	Other hardwoods	3,012.4	3.4	-0.6	4,882.8	5.8	-6.5
	All species	27,016.7	1.2	4.9	57,078.4	2.0	-0.1

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

The forest industry is an important component of Maine's economy. Knowing who owns the timber resource, and who is and is not harvesting, is important for making informed business and policy decisions. For example, Maine's Healthy Forest Program is trying to find ways to increase active forest management by family forest owners.

Most of the forest land in Maine is privately owned, primarily by corporate and family ownerships, 59 and 32 percent of the State's forest land, respectively (Fig. 6). The proportion of standing volume owned by family and State ownerships is larger than their proportion of acreage; for corporate owners, their proportion is smaller. The relative distribution of timber harvesting reflects differences in ownership objectives and management practices; 65 percent of the removals are from corporate lands, compared to 29 percent from family forest lands and the rest coming from public or tribal lands.

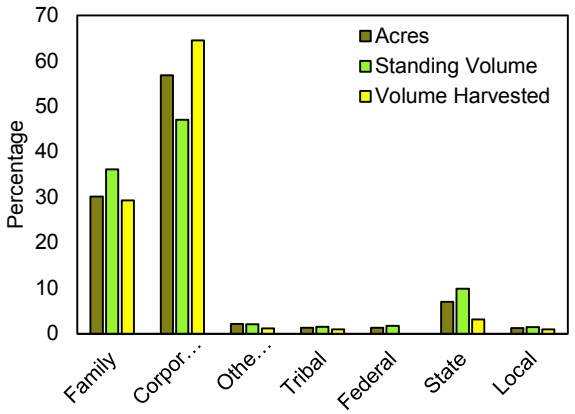

Figure 6.—Percentage of forest land, standing timber volume and annual timber harvest volume by ownership class, Maine, 2016.

Using data from the National Woodland Owner Survey (Butler et al. 2016), the 165,000 family forest ownerships (86,000 family forest ownerships with 10+ acres) in Maine can be examined in greater detail. Family forest ownerships have a range of size of holdings with approximately half of the family forest land in holdings of at least 100 acres (Fig. 7). By combining the NWOS and plot data, it can be seen that the larger ownerships contribute a disproportionate amount 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 the attributes of timber harvesters, and nonharvesters, in Maine.

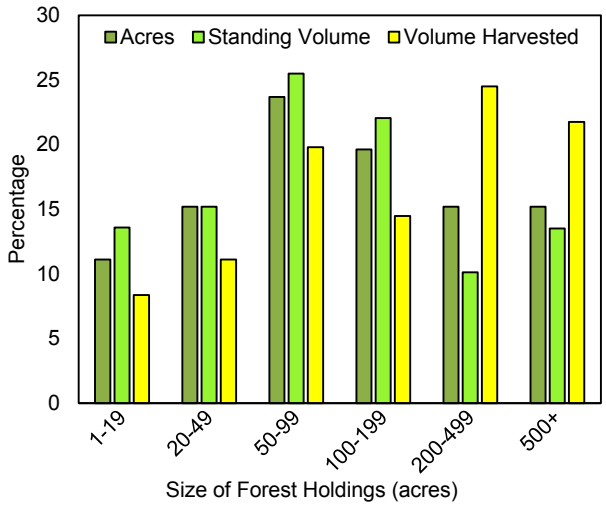

Figure 7.—Percentage of forest land, standing timber volume, and annual timber harvest volume by family forest ownership size class, Maine. Plot data: 2012-2016 (remeasured from 2007-2011). NWOS data: 2011-2103.

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How to Cite This Publication

Butler, Brett J. 2017. **Forests of Maine, 2016.** Resource Update FS-128. Newtown Square, PA: U.S. Department of Agriculture, Forest Service, Northern Research Station. 4 p.

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The published report and data tables are available online at https://doi.org/10.2737/FS-RU-128