

New Hampshire's Forest Resources, 2011

Research Note NRS-140

This publication provides an overview of forest resource attributes for New Hampshire based on an annual inventory conducted by the Forest Inventory and Analysis (FIA) program at the Northern Research Station of the U.S. Forest Service. These estimates, along with web-posted core tables, will be updated annually. For more information, please refer to page 4 of this report.

Table 1. – Annual estimates and uncertainty

	2011 estimate	Sampling error (%)
Forest Land Estimates		
Area (1,000 acres)	4,832	1.0
Number of live trees 1-inch diameter or larger (1,000,000 trees)	4,298	2.7
Biomass of live trees 1-inch diameter or larger (1,000 tons)	283,164	1.8
Net volume in live trees 5-inch diameter or larger (1,000,000 ft ³)	10,948	1.9
Annual net growth of live trees 5-inch diameter or larger (1,000 ft ³ /year)	200,176	5.7
Annual mortality of live trees 5-inch diameter or larger (1,000 ft ³ /year)	119,008	5.9
Annual harvest removals of live trees 5-inch diameter or larger (1,000 ft ³ /year)	131,950	13.1
Annual other removals of live trees 5-inch diameter or larger (1,000 ft ³ /year)	1,546	71.5
Timberland Estimates		
Area (1,000 acres)	4,641	1.1
Number of live trees 1-inch diameter or larger (1,000,000 trees)	4,037	2.9
Biomass of live trees 1-inch diameter or larger (1,000 tons)	274,877	1.9
Net volume in live trees 5-inch diameter or larger (1,000,000 ft ³)	10,631	2.0
Net volume of growing-stock trees (1,000,000 ft ³)	9,813	2.1
Annual net growth of growing-stock trees (1,000 ft ³)	198,941	5.0
Annual mortality of growing-stock trees (1,000 ft ³ /year)	85,055	6.5
Annual harvest removals of growing-stock trees (1,000 ft ³ /year)	111,090	13.4
Annual other removals of growing-stock trees (1,000 ft ³ /year)	8,678	50.7

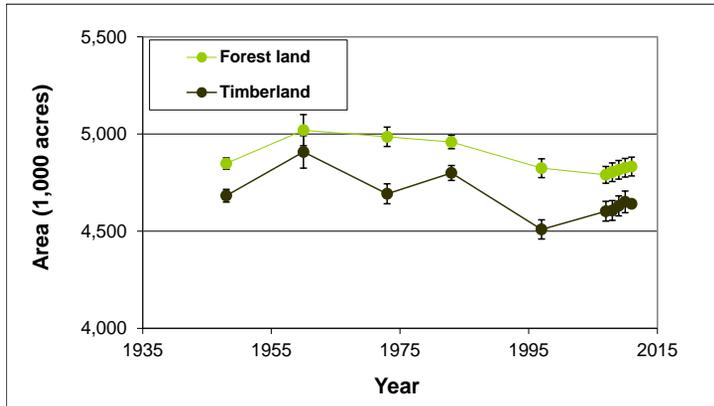


Figure 1. – Area of timberland and forest land by year.

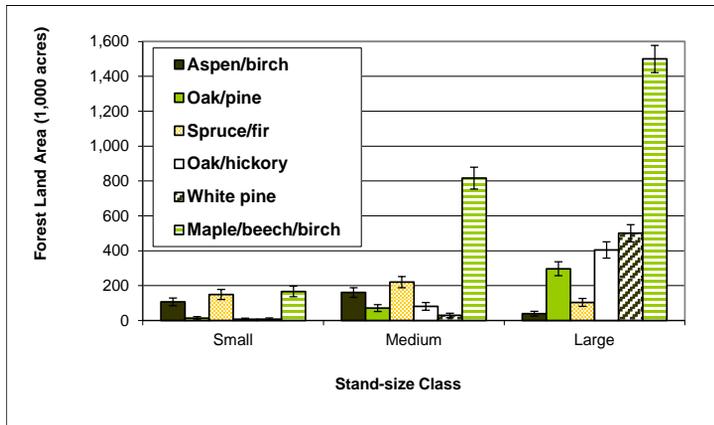


Figure 2. – Area of forest land by top six forest types and stand size class, 2007-2011.

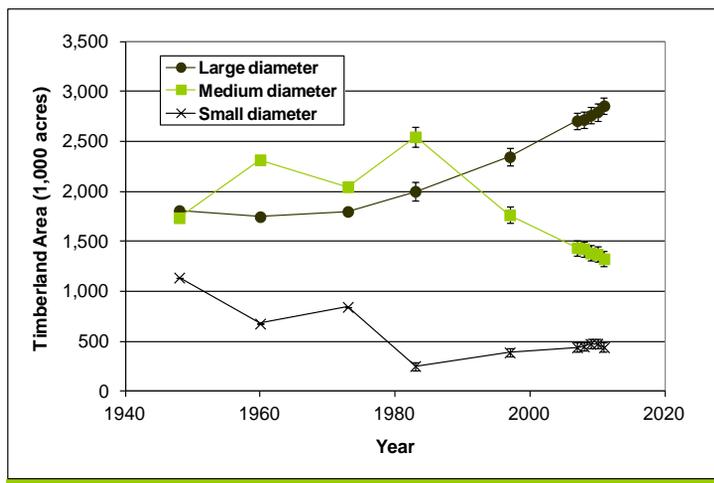


Figure 3. – Area of timberland by stand-size class and year.

Note: When available, sampling errors/bars provided in figures and tables represent 68 percent confidence intervals

Table 2. – Top 10 tree species by statewide volume estimates (5-inch diameter and larger), 2007-2011

Rank	Species	Volume of live trees on forest land (1,000,000 ft ³)	Sampling error (%)	Volume of sawtimber trees on timberland (1,000,000 bdf ^t)	Sampling error (%)
1	Eastern white pine	2,181	6.2	9,684	6.6
2	Red maple	1,682	4.1	3,241	6.7
3	Northern red oak	1,154	6.6	3,850	7.6
4	Eastern hemlock	1,130	7.3	3,108	8.6
5	Sugar maple	879	7.8	2,250	9.7
6	Yellow birch	636	6.5	1,373	9.5
7	Red spruce	537	8.7	1,336	10.7
8	American beech	526	7.9	1,044	12.6
9	Balsam fir	525	8.3	675	12.0
10	Paper birch	517	6.2	773	10.0
	Other softwood species	135	23.0	354	22.2
	Other hardwood species	1,046	5.9	2,671	8.5
	All species	10,948	1.9	30,359	2.9

Mature Forests are the Norm but “Old Growth” is Scarce

The diversity of tree ages and sizes in late-successional (i.e., old growth) forests provides a broad range of habitats for flora and fauna while making them more dynamic and resilient to disturbance. Although the trend of increasing forest land area in large-diameter stands clearly demonstrates the continuing maturation of New Hampshire’s forests toward stands of larger, older trees (Figure 3), New Hampshire still has a low percentage of “old growth” forests (Figure 4) and very large trees (Figure 5).

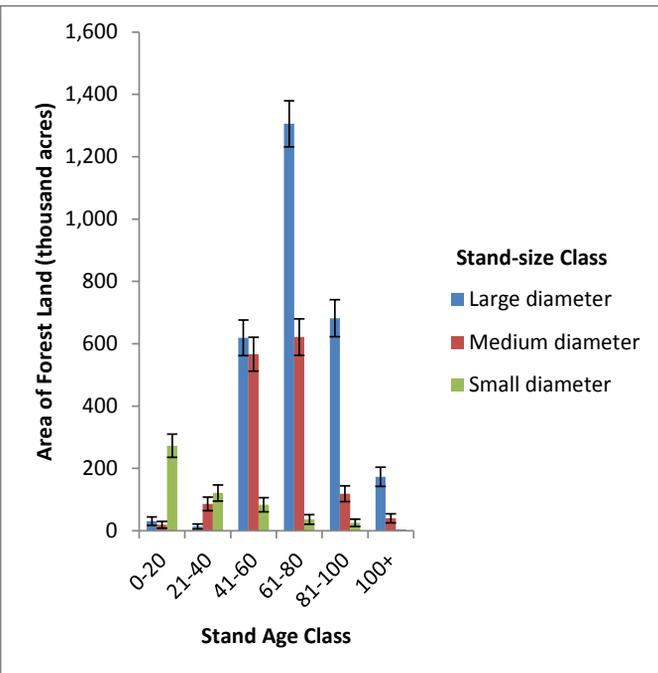


Figure 4. – Area of forest land by stand-size class and stand age class, 2010.

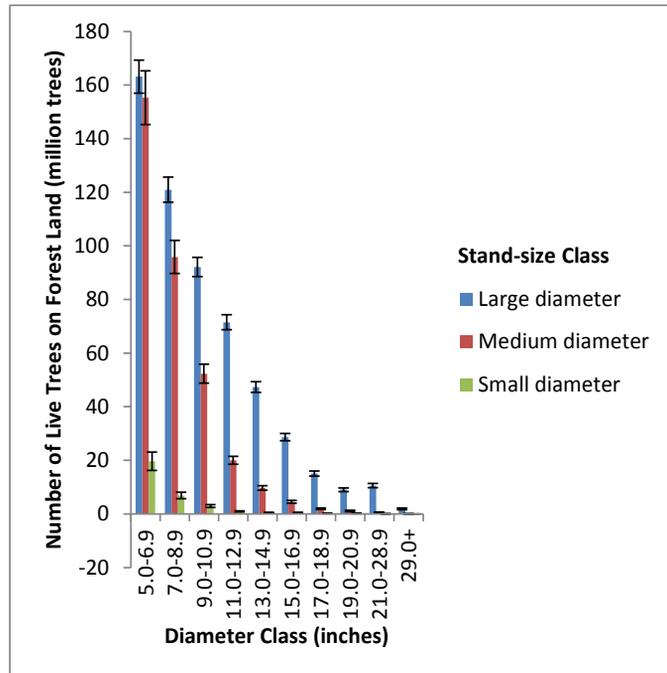


Figure 5. – Number of live trees on forest land by diameter class, 2010.

Continued

Three major characteristics of “old growth” forests are the abundance of large diameter living trees, standing dead trees, and downed coarse woody debris (CWD) (McGee et al. 1999). According to FIA estimates, 62 percent of New Hampshire’s forest land consists of large diameter stands, but that classification is based on diameters that qualify trees to be sawtimber. McGee et al. (1999) reported that old growth northern hardwood stands contained about 22 trees per acre greater than or equal to 22 inches in diameter. By contrast, New Hampshire’s forests only contain on average about 2.1 trees per acre of this size. Even if we limit this average to stands in the large diameter stand-size class there are only 3.6 trees per acre greater than or equal to 22 inches in diameter.

Similarly, McGee et al. (1999) reported that old growth northern hardwood stands contained about 7.4 standing dead trees per acre greater than or equal to 20 inches in diameter. By contrast, New Hampshire’s forests on average contain less than one tree per acre (0.3) of this size. Even if we limit this average to stands in the large diameter stand-size class the average remains less than one per acre (0.5). The diameter distribution of standing dead trees highlights the dearth of trees in the largest diameter classes (Figure 6).

Finally, McGee et al. (1999) reported that old growth northern hardwood stands contained about 332 cubic feet of CWD per acre greater than or equal to 20 inches in diameter and 998 cubic feet of CWD between 10 and 20 inches in diameter. By contrast, New Hampshire’s forests on average only contain 35 cubic feet of CWD greater than or equal to 20 inches. Even if we limit this average to stands in the large diameter stand-size class there is only 56 cubic feet per acre greater than equal to 20 inches in diameter. Additionally, the average acre in New Hampshire’s forests only contains 152 cubic feet of CWD volume in the 10 to 20 inch diameter class and 242 cubic feet of CWD when looking only at the large diameter stand-size class. Currently, there is a dearth of CWD volume across all diameter classes and forest-type groups even in stands classified as the large diameter stand-size class (Figure 7).

Landowners that are interested in improving habitat for wildlife and increasing the diversity of forests can engage in management activities that increase these old growth characteristics.

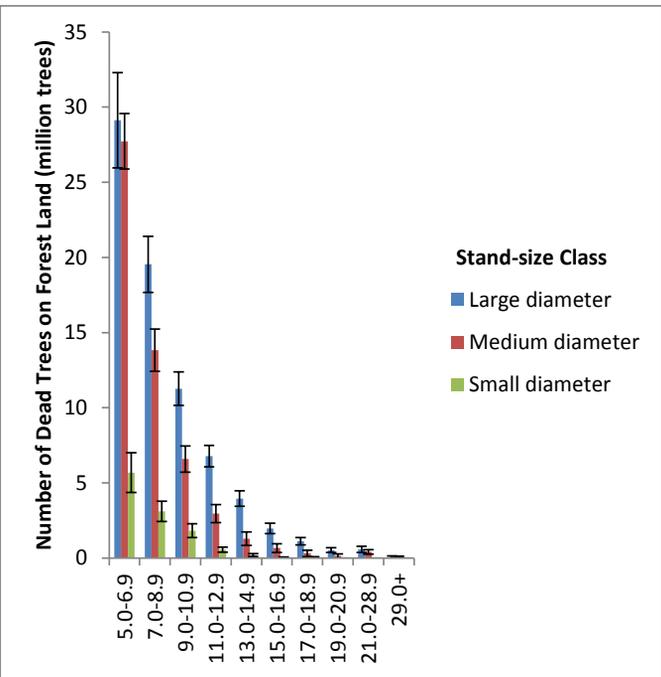


Figure 6. – Number of dead trees on forest land by diameter class, 2010.

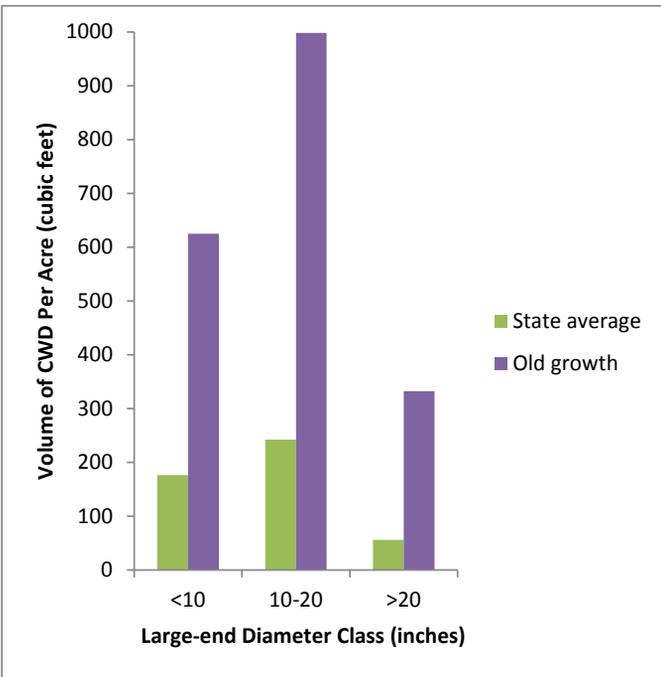


Figure 7. – Coarse woody debris volume per acre on forest land by large-end diameter class, 2010; old growth volumes from McGee (1999).

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FIA Program Information

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Woudenberg, S.W.; Conkling, B.L.; O'Connell, B.M.; LaPoint, E.B.; Turner, J.A.; Waddell, K.L. 2010. **The Forest Inventory and Analysis database: Database description and users manual version 4.0 for Phase 2**. Gen. Tech. Rep. RMRS-GTR-245. Fort Collins, CO: U.S. Department of Agriculture, Forest Service, Rocky Mountain Research Station. 339 p.

Additional Information

McGee, G.G.; Leopold, D.J.; Nyland, R.D. 1999. **Structural characteristics of old-growth, maturing, and partially cut northern hardwood forests**. Ecological Applications. 9: 1316-1329.

Additional New Hampshire Inventory Information

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Estimates, tabular data, and maps from this report may be generated at: <http://www.fia.fs.fed.us/tools-data/>

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