North Carolina, 2011

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Mountain view. (photo by USDA Forest Service, Southern Research Station, Bugwood.org)

Forest Inventory & Analysis Factsheet

Forest Land Area

In 2011, forest area in North Carolina was 18,587,541 acres (table 1), relatively unchanged from 18,582,157 in 2007. Based on 45 percent new data, forest area appears stable or trending slightly upward. Forests continue to cover about 60 percent of the State's land area. Ninety-seven percent of the forested area (18,077,329 acres) is considered available for timber production and classified as timberland. The other 510,212 acres of forest is largely reserved or unproductive. FIA defines reserved as land legislatively withdrawn from commercial timber production. Portions of the Great Smoky Mountains National Park and national forest wilderness areas constitute most of the reserved area. Since reserved status is often difficult to ascertain, particularly at the local government level, many acres that are not available for commercial timber production may not be included as reserved. In addition, the area unavailable may actually be greater due to access or economic reasons.

Introduction

Forest Inventory and Analysis (FIA) factsheets are produced periodically to keep the public updated on the extent and condition of forest lands in each State. Estimates in the factsheets are based upon data collected from thousands of sample plots distributed across the landscape in a systematic manner. In North Carolina, this process is a collaborative effort between the United States Forest Service and the North Carolina Forest Service. This factsheet is an annualized update of the last complete survey collected from 2003 to 2007 and refreshed by reprocessing with data collected in 2009, 2010, and 2011 to obtain an estimate for the year 2011. Thus, the 2011 data represent a complete survey collected from 2003 to 2011 of which 45 percent is new data. This factsheet compares data for 1990, 2002, 2007, and 2011 extracted from the FIA database and Evalidator interface on the Southern Research Station FIA Web site on April 30, 2013 at http://fia.fs.fed.us/tools-data/.

Table 1—Area by land class and year, North Carolina

Land class	1990	2002	2007	2011
			acres	
Timberland	18,710,381	18,356,476	18,038,166	18,077,329
Other/reserved	567,168	465,868	543,991	510,212
Total forest land	19,277,549	18,822,344	18,582,157	18,587,541
Nonforest land	11,950,671	12,346,052	12,551,395	12,539,785
Total land area	31,228,220	31,168,396	31,133,552	31,127,326
Census water	3,234,560	3,275,315	3,310,157	3,316,385
Total area	34,462,780	34,443,711	34,443,709	34,443,711
Percent land area forested	61.73	60.39	59.69	59.71

Mixed species. (photo by USDA Forest Service, Southern Research Station, Bugwood.org)

Forest Distribution

Sixty-eight of North Carolina's 100 counties were ≥50 percent forested. Twenty-three of these were ≥75 percent forested (fig. 1). Fifteen of the most heavily forested counties were located in the Mountain region of the State. There were two counties <25 percent forested, both in the Northern Coastal Plain region of the State. The portion of the State's forests classified as timberland, 18,077,329 acres, is the basis for the remaining data in this factsheet. Table 2 shows the distribution of this timberland by survey unit. The Piedmont and Mountain survey units of the State appear almost stable, while timberland appears to be increasing slightly in the two Coastal Plain survey units.

Forest Ownership

Nonindustrial private forest (NIPF) owners hold almost 79 percent of the State's timberland (fig. 2). NIPF area increased slightly to 14,269,900 acres from 14,126,660 in 2007. Within the NIPF group, area under individual ownership trended down, from 11,501,710 to 11,215,150 acres in 2011. Timberland under nonindustrial corporate ownership has risen from 2,624,950 to 3,054,750 acres. Public ownerships cumulatively own 15 percent, or 2,623,557 acres, up slightly from 2,502,783 in 2007. Forest industry ownership accounted for <7 percent of the State's timberland, down from 1,408,730 acres in 2007 to 1,183,860 in 2011.

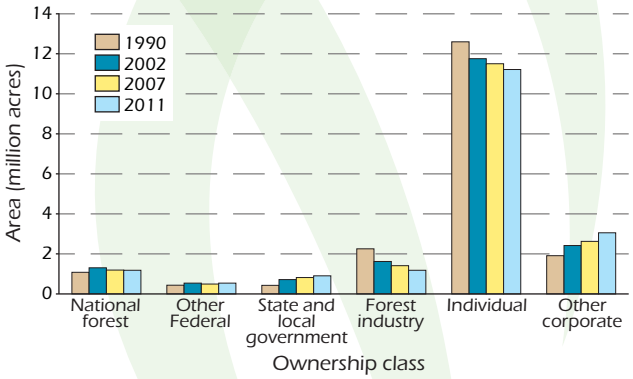


Figure 2—Area of timberland by ownership class and year, North Carolina.

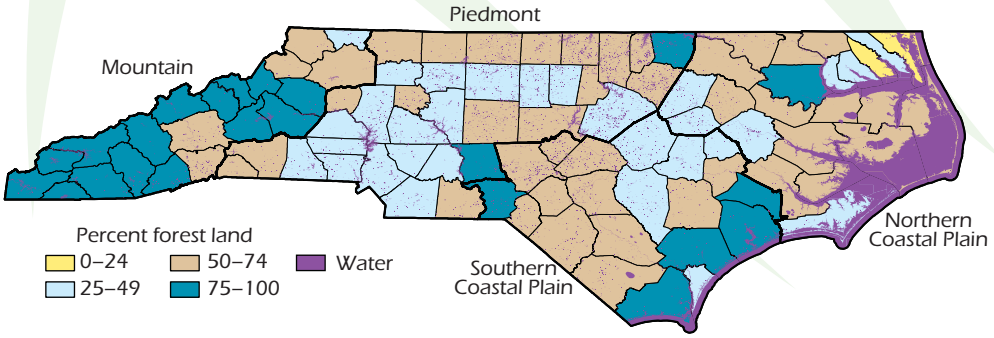


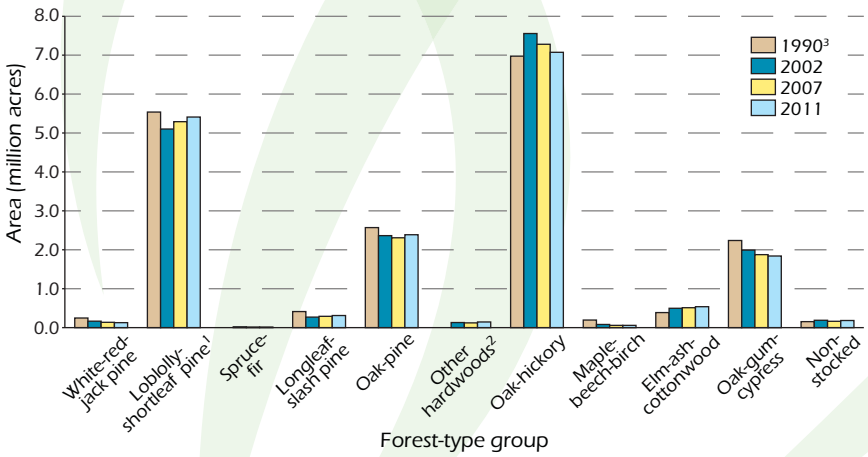
Figure 1—Survey units and percentage of land in forest by county, North Carolina, 2011.

Table 2—Area of timberland by survey unit and year, North Carolina

Survey unit	1990	2002	2007	2011	Change since 2007
	acres				percent
Southern Coastal Plain	5,236,378	5,237,274	5,083,747	5,109,535	0.51
Northern Coastal Plain	3,767,862	3,777,394	3,689,755	3,711,433	0.59
Piedmont	5,751,123	5,472,862	5,332,322	5,326,226	-0.11
Mountains	3,955,018	3,868,947	3,932,342	3,930,135	-0.06
All survey units	18,710,381	18,356,476	18,038,166	18,077,329	0.22

Forest-Type Composition

Altogether, hardwood forest types comprise 67 percent of North Carolina's timberland, or 12,033,961 acres. Softwood forest types occupy 32 percent, or 5,860,941 acres of timberland, and nonstocked areas makeup the remaining 1 percent, or 182,425 acres. The oak-hickory forest-type group predominates with 7,072,524 acres of the timberland (fig. 3). The loblolly-shortleaf pine type group is second with 5,411,415 acres, oak-pine type group is third with 2,386,843 acres, and oak-gum-cypress is next with 1,838,869 acres of the timberland. The order of forest type prevalence was unchanged. However, changes in some type group estimates were apparent. Mainly, area of oak-hickory and oak-gum-cypress experienced reductions, while area of loblolly-shortleaf pine experienced increases. Although nominal, the area of longleaf-slash pine increased to 310,208 acres in 2011 from 290,083 in 2007.



[1] Includes other softwoods.
[2] Includes exotic hardwoods and aspen-birch.
[3] 1990 survey data incorporated spruce-fir with other softwoods and other hardwoods with oak-hickory.

Figure 3—Area of timberland by forest-type group and year, North Carolina.

Stand-Size Distribution

Sawtimber-size stands dominated with 9,908,944 acres, or 55 percent of North Carolina's timberland. Across the three major stand-size categories, upland hardwood type groups were the most prevalent in the sawtimber and sapling-seedling stand-size categories (fig. 4). In the poletimber stand-size category, the area of yellow pine poletimber exceeded the area of poletimber in each of the other forest-type groups. Within the upland hardwood type group, sawtimber-sized stands far exceeded the area of its poletimber and sapling-seedling sized stands combined. This type group structure was nearly as evident within the lowland hardwood type group as well, but not true for the yellow pine type group. Area of sawtimber-sized stands continued to increase for upland hardwood and yellow pine type groups, but remained almost stable for the lowland hardwood type group. Area of oak-pine type group increased in the sawtimber size category, and remained somewhat stable in the poletimber and sapling-seedling size categories.

Maple. (photo by USDA Forest Service, Southern Research Station, Bugwood.org)

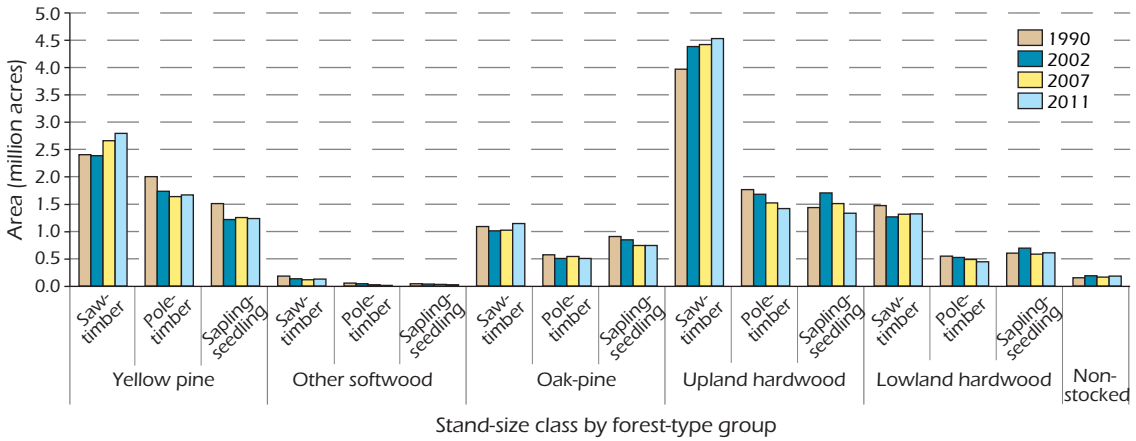


Figure 4—Area of timberland by stand-size class, forest-type group, and year, North Carolina.

Stand Origin

Altogether, 3,236,876 acres, or 18 percent, of the State's timberland for 2011 showed evidence of artificial regeneration (fig. 5). This represents a drop of <1 percent from 3,262,319 acres in 2007. Most of the artificially regenerated timberland, or 2,710,903 acres, were classified as a softwood type, 99 percent of which were yellow pine types. The planted softwood acreage was up slightly from 2,709,225 in 2007. In 1990, the area of natural softwood was about twice that of planted softwood. By 2007, the two were roughly equal, due to reduction in area of natural softwood along with increased area of planted softwood. Hardwood types with evidence of planting totaled 494,593 acres. These stands are typically classified as oak-pine or even oak-hickory based upon the species composition stocking that often results from inadequate successful artificial regeneration with pine. Area of natural stands in the State appears to have increased to 14,840,453 acres from 14,775,848 largely due to increased area of natural softwood from 3,018,452 to 3,150,039 acres.

Dogwood. (photo by USDA Forest Service, Southern Research Station, Bugwood.org)

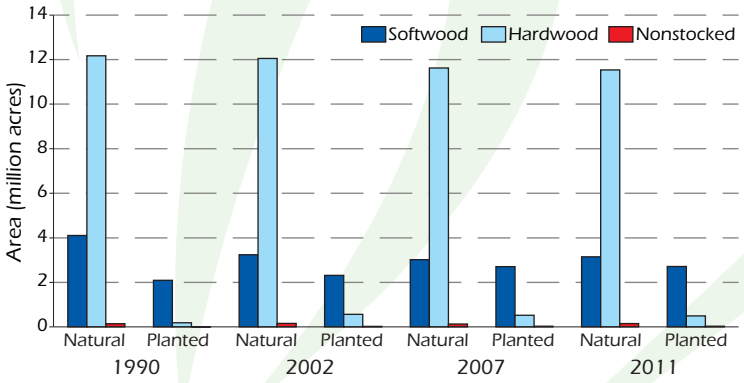


Figure 5—Timberland area by major forest-type group, stand origin, and survey year, North Carolina.

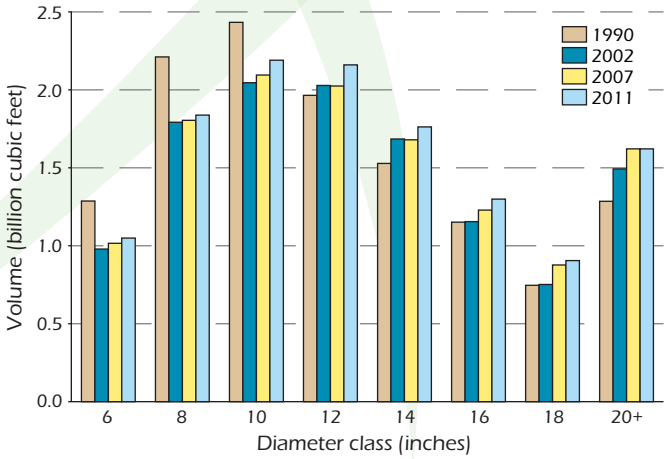


Figure 6—Softwood all-live volume on timberland by diameter class and year, North Carolina.

Tree Volume

For all species combined, all-live tree volume on timberland in North Carolina increased from 35.760 billion cubic feet in 2007 to 37.140 billion cubic feet in 2011. Softwood volume increased from 12.348 to 12.828 billion cubic feet with the largest volumes by diameter class occurring in the 10- and 12-inch classes (fig. 6). All softwood diameter classes from 6 through 18 inches increased in volume. The increases were highest in the 10- through 14-inch classes. The hardwood volume increased as well from 23.412 to 24.312 billion cubic feet. Although all hardwood diameter classes increased in volume, the changes were nominal and more evident in the 18- and 20+-inch diameter classes (fig. 7).

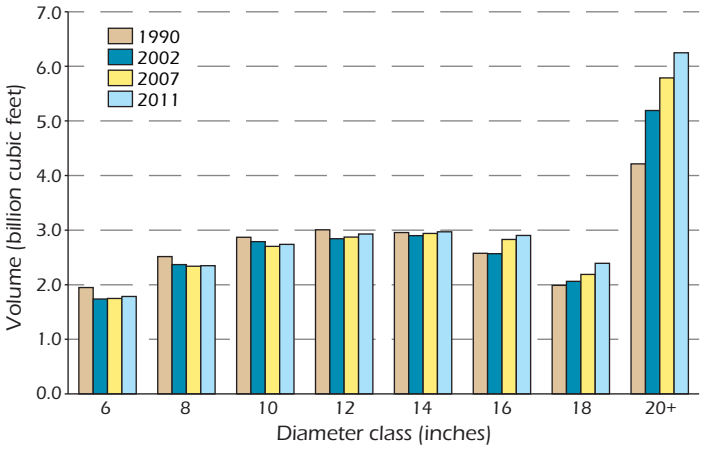


Figure 7—Hardwood all-live volume on timberland by diameter class and year, North Carolina.

Growth, Removals, and Mortality

The components utilized to determine total timber resource change are gross growth, mortality, and removals. Overall gross growth measured during the survey is reduced by the amount of mortality measured, which yields net growth. Net growth is then reduced by the volume of removals measured. This represents net change in volume for the timber resource.

The net growth for softwoods has increased to 764.24 from 702.15 million cubic feet in 2007 (fig. 8). Softwood removals decreased to 572.68 in 2011 from 613.50 million cubic feet in 2007. Under these conditions, where net growth was up and removals were down, the softwood growth to removals relationship yielded a positive net change of 191.56 million cubic feet annually in the softwood resource statewide.

Net growth of all-live hardwoods on North Carolina's timberland also increased. Hardwood net growth averaged 834.00 million cubic feet annually in 2011 compared to 747.52 million cubic feet in 2007 (fig. 8). Concurrently, hardwood removals decreased noticeably to 428.93 from 533.11 million cubic feet in 2007. Similar to that for softwoods, the combination of increased net growth and decreased removals has resulted in a very large positive net change for hardwoods on the order of 405.07 million cubic feet annually.

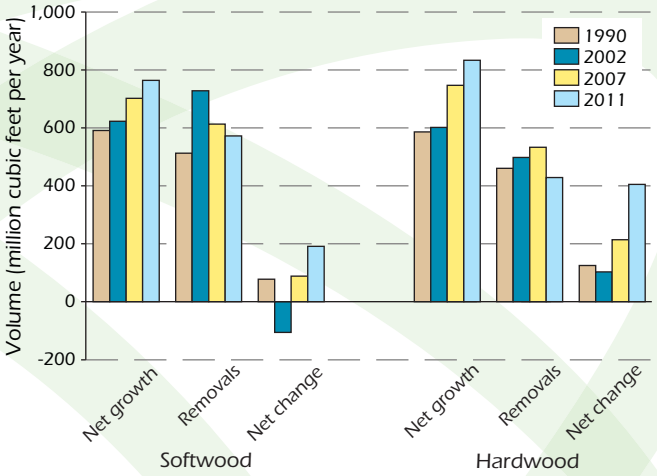


Figure 8—All-live volume of net growth and removals on timberland by major forest-type group and year, North Carolina.

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Coastal plain marsh. (photo by USDA Forest Service, Southern Research Station, Bugwood.org)

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