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# Missouri's Forest Resources in 2002

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# Missouri's Forest Resources in 2002

The North Central Research Station's Forest Inventory and Analysis (NCFIA) program began fieldwork for the fifth forest inventory of Missouri's forest resources in 1999. This inventory initiated the new annual inventory system in which one-fifth of the field plots (considered one panel) in the State are selected for measurement each year. A complete inventory consists of measuring and compiling the data for all plots (or five panels). Once all panels have been measured, each will be remeasured approximately every 5 years. For example, in Missouri, the field plots measured in 2000 will be remeasured in 2005.

In 2002, NCFIA continued the annual inventory effort with the fourth (annual) panel of the fifth Missouri forest inventory. Previous inventories of Missouri occurred in 1947, 1959, 1972, and 1989 (USDA Forest Service 1948, Gansner 1965, Spencer and Essex 1976, Spencer *et al*. 1992). This fifth inventory of Missouri's forest resources will be completed in 2003. However, because each year's sample is a systematic sample of the State and because timely information is needed about Missouri's forest resources, estimates have been prepared from data gathered during the first 4 years of the inventory. Data presented in this report represent 80 percent of the field plots (or four panels) of a complete inventory. These data are a combination of the first year's panel from 1999, the second year's panel from 2000, the third year's panel from 2001, and the fourth year's panel from 2002. An earlier report was published for the combined 1999, 2000, and 2001 panels (Moser *et al.* 2003). The results presented are estimates based on sampling; estimates for this report were compiled assuming that the 1999, 2000, 2001, and 2002 data represent one sample. As additional panels are completed, the precision of the estimates will increase and additional data will be released.

Data from new inventories are often compared with data from earlier inventories to determine trends in forest resources. However, for the comparisons to be valid, the procedures used in the two inventories must be similar. As a result of our ongoing efforts to improve the efficiency and reliability of the inventory, several changes in procedures and definitions have been made since the last Missouri inventory in 1989 (Hahn and Spencer 1991, Spencer *et al*. 1992). Although these changes will have little impact on statewide estimates of forest area, timber volume, and tree biomass, they may have significant impacts on plot classification variables such as forest type and stand-size class. Some of these changes make it inappropriate to directly compare portions of the 1999–2002 data with those published for earlier inventories.

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## RESULTS

### Area

Total forest land area was 14.5 million acres in 2002 (table 1). Eighteen percent of this area is owned by public agencies and 82 percent is owned by private landowners. In 2002, 4 percent of the area was dominated by softwoods and 95.4 percent by hardwoods. The remaining acres were classified as nonstocked. Oak-hickory forests constituted almost three-fourths of the total hardwood area. The pinyon/juniper forest type group (primarily composed of eastern redcedar)[1] constituted 72 percent of all forest land dominated by softwoods. The oak component

[1] *Before 1999, pinyon/juniper was referred to as eastern redcedar in the inventories.*

has stayed nearly constant: the 1947 oak-pine, oak-hickory, and white oak forest type groups constituted 77.6 percent of the total forest land area, and the 1999-2002 oak-pine and oak-hickory groups made up 84.4 percent.

Like forest land, timberland area has continued to increase since its low point in the 1972 inventory (fig. 1), but the total area of 14.1 million acres in 2002 was still less than the 15 million acres estimated in the 1947 survey (USDA Forest Service 1948).

The area of timberland by forest type group was dominated by hardwoods (table 2). Hardwoods made up 95.5 percent of the total acreage, 94.7 percent of all public land acreage, and 95.7 percent of all private landholdings. The 10.4 million acres of oak-hickory dominated the hardwood category in 2002 (table 3, fig. 2). For most of the forest type groups, the preponderance of acreage was classified as sawtimber stand-size class. The exceptions were pinyon/juniper, and oak/pine.

The acreage of timberland in the sawtimber class has increased by over 5 million acres since 1947 (fig. 3). When one combines the sawtimber acreage with the poletimber acreage, it appears Missouri's forests are composed of many large-diameter and, presumably, old trees. Increased reforestation, both natural and by planting, appears to have resulted in a negligible number of acres in the nonstocked category.

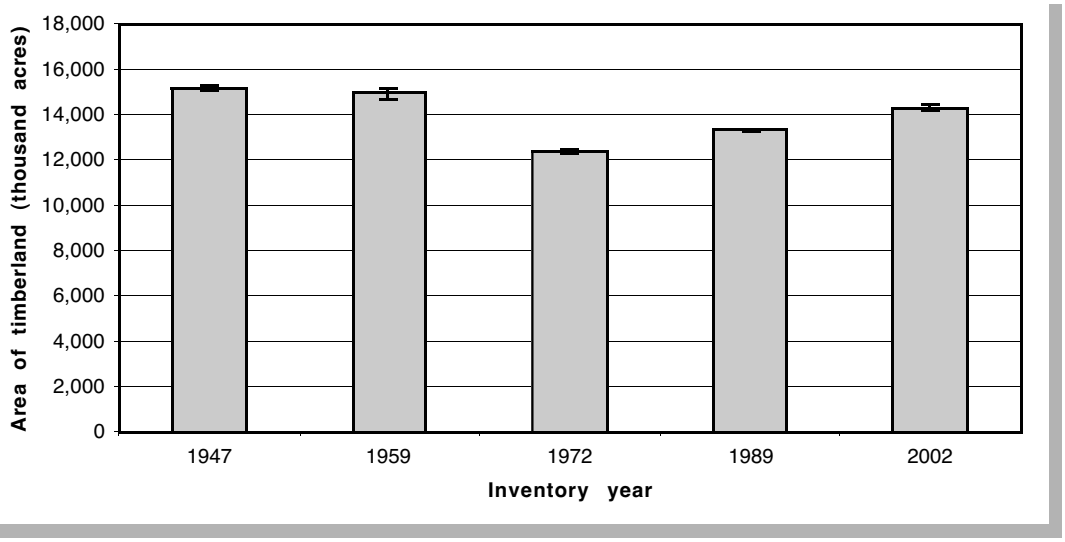



*Figure 1. — Area of timberland, Missouri, 1947-2002. (Note: The sampling error associated with an inventory estimate is represented by the vertical line at the top of each bar.)*

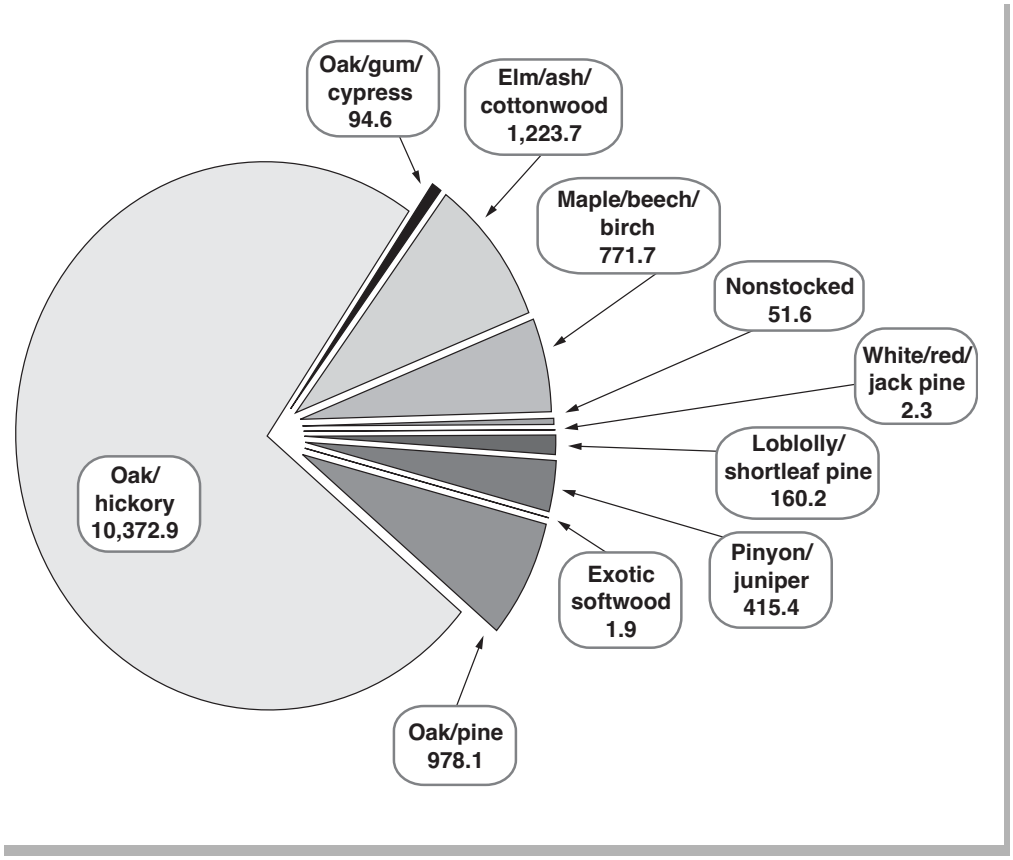



Figure 2. — *Area of timberland by forest type group, Missouri, in thousands of acres, 1999-2002.*

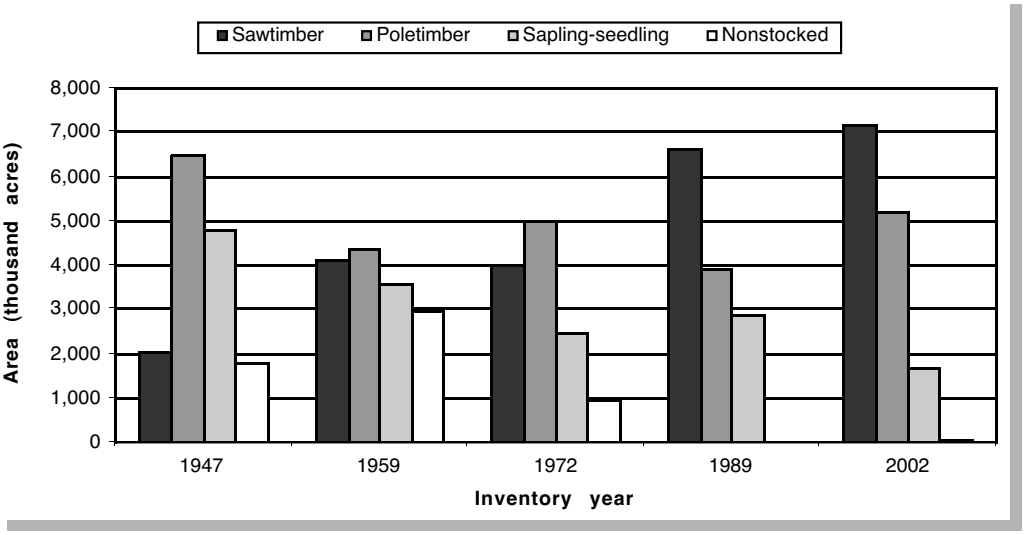



*Figure 3. — Area of timberland by stand-size class, Missouri, 1947-2002.*

## Volume

The net volume of all live trees on forest land, which includes growing stock, rough trees, and rotten trees, was 17.7 billion cubic feet in 2002 (table 4). Hardwoods constituted 16.3 billion cubic feet and softwoods made up 1.3 billion cubic feet. Oaks were 11.0 billion cubic feet or 67 percent of all hardwoods. Select oaks (red and white) were 5.1 billion cubic feet or 47 percent of all oaks and 31.3 percent of all hardwoods. This represents a considerable increase over the 1972 inventory, which listed the total volume of all live trees as 9 billion cubic feet, all hardwoods as 8.6 billion cubic feet, all oaks as 6.4 billion cubic feet, and all select oaks as 2.6 billion cubic feet (Spencer and Essex 1976).

Net volume of all live trees and salvable dead trees on timberland was 17.4 billion cubic feet in 2002 (table 5, fig. 4). All live trees made up 17.2 billion cubic feet or 99 percent. The difference between the total and the 17.6 billion cubic feet of all live trees on forest land (table 4) represents the 280 million cubic feet on land that is either of low productivity (incapable of growth greater than 20 cubic feet per acre per year at the culmination of mean annual increment) or reserved (e.g., parks, wilderness areas). Of the 14.2 billion cubic feet of growing-stock trees, 9.3 billion cubic feet or 66 percent was sawtimber. The sawtimber percentage breakdowns for softwoods and hardwoods (both at 66 percent) were similar to the overall proportions.

Cull trees, at 3.0 billion cubic feet, made up 17.4 percent of all live trees. The softwood cull tree volume represented only 7.9 percent of the total softwood live tree volume, whereas hardwood culls represented 18.2 percent of the total hardwood volume. Given the phototropic (sun-following) growth habit of hardwoods, the poor stem form resulting from inadequate self-pruning, the history of high-grading in hardwood stands, and high stocking levels, the disparity in the cull percentage is not surprising.

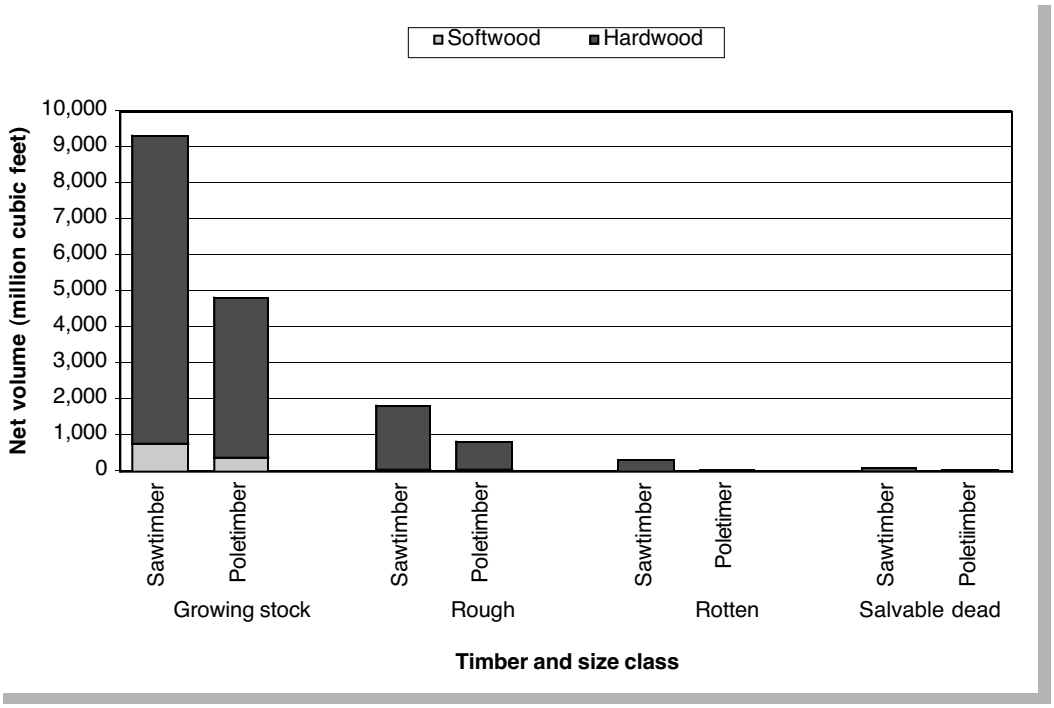



*Figure 4. — Net volume of all live trees and salvable dead trees on timberland by class of timber and softwood/hardwood categories, Missouri, 1999-2002.*

The net volume of growing stock on timberland totaled 14.2 billion cubic feet in 2002 (table 6). Over 96 percent (13.7 billion cubic feet) was hardwood forest types and 3.5 percent (497 million cubic feet) was softwood. In this table, the volumes are shown for softwoods and hardwoods for each forest type group. For example, the oak/pine forest type group had 411 million cubic feet of softwoods and 416 million cubic feet of hardwoods. Growing-stock volume has been steadily increasing in Missouri over the last 55 years (fig. 5).

Table 7 shows net volume of growing stock on timberland by species group and diameter class. The totals for softwood and hardwood volumes, 1.2 billion cubic feet and 13.0 billion cubic feet, respectively, are the same as the totals at the bottom of the columns in the forest type group table (table 6).

The net volume of sawtimber on timberland was 45.0 billion board feet (table 8). As with many other measures of coverage and abundance in Missouri, hardwoods constituted the preponderance of the volume (91 percent or 41.0 billion board feet). Red and white oaks totaled 29.9 billion board feet or 73 percent of the hardwood sawtimber total. Trees that were 19 or more inches in diameter were 4.8 percent of the softwood volume (193.5 million board feet) and 22.1 percent of the hardwood volume (9.1 billion board feet). In 1989, the proportions were 3.6 percent and 16.8 percent, respectively (Spencer *et al*. 1992).

## Biomass

The all live aboveground biomass on timberland in Missouri totaled 549.8 million dry tons in 2002 (table 9). Almost 9 percent of that total, or 48.8 million dry tons, was in 1- to 5-inch trees; 72.4 percent, or 397.9 million tons, was in growing-stock trees; and 18.8 percent, or 103.1 million tons, was in non-growing-stock trees. Private landowners held 82.2 percent or 452.1 million tons, while public owners held 17.8 percent (97.7 million dry tons). Of the 397.9 million dry tons in growing-stock trees, 81.2 percent is on private land and 18.8 percent is on public land. Among non-growing-stock trees, 87.5 percent of the biomass is on private land and 12.5 percent is on public land (fig. 6).

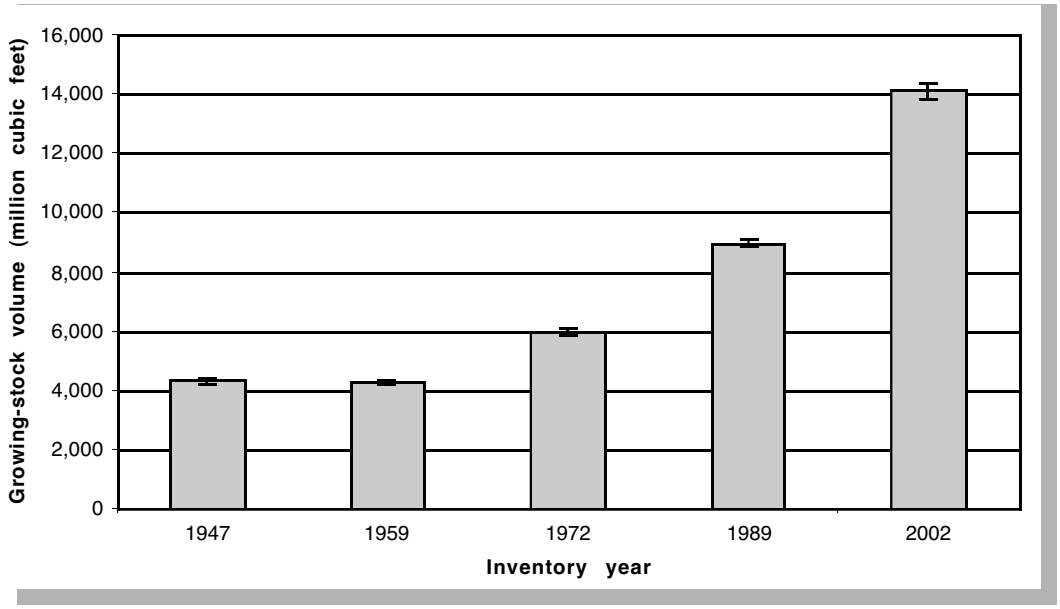



Figure 5. — *Growing-stock volume on timberland, Missouri, 1947-2002. (Note: The sampling errors associated with each inventory estimate are represented by the vertical lines at the top of each bar.)*

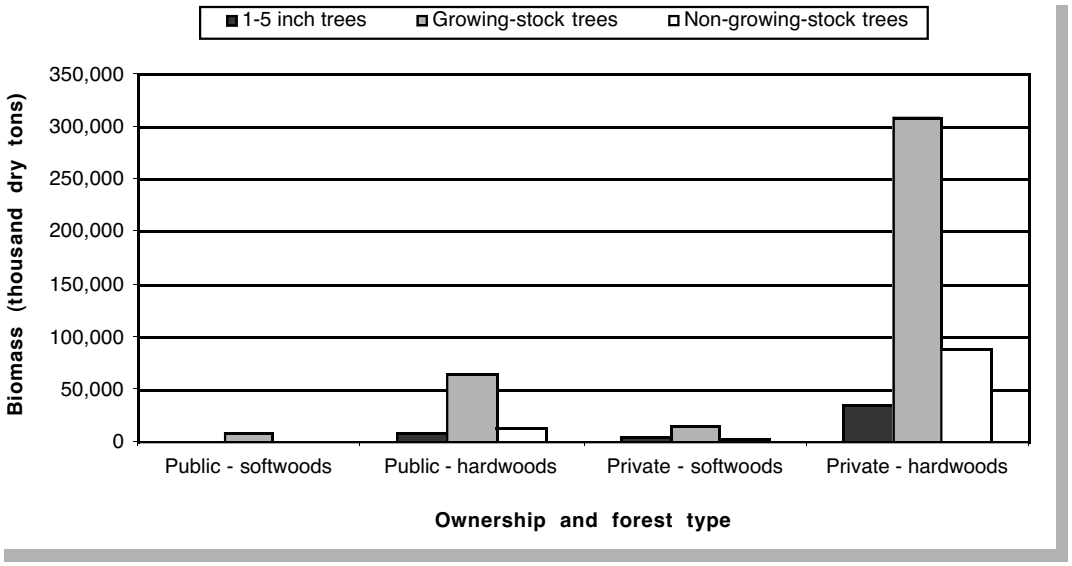



Figure 6. — *Live aboveground biomass on timberland, in dry tons, by ownership type and forest type, Missouri, 1999-2002.*

Almost 72 percent of the total biomass of the growing-stock trees was in the boles, and the remaining 28.1 percent was in stumps, tops, and limbs. Approximately the same proportions existed for the 103.1 million dry tons of non-growing-stock trees: 72.7 percent was in bolewood and 27.3 percent was in stumps, tops, and limbs. The only apparent deviation was the percentage of biomass in publicly owned growing-stock softwoods: 83.2 percent of the biomass was made up of tree boles, and stumps, tops, and limbs constituted the remaining 16.8 percent. This difference could reflect management activities, or perhaps the stands were made up mainly of younger, more densely stocked pine plantings and natural regeneration. Non-growing-stock softwoods on public land, a relatively small 230.9 thousand dry tons, also had a slightly higher percentage in the boles, 75.9 percent, than did the total ownership, non-growing-stock percentage of 72.7 percent.

An interesting facet of these data is the relatively small proportion of aboveground biomass in non-growing-stock softwood trees (8.0 percent of all softwood biomass) vs. non-growing-stock hardwood trees (19.4 percent of all hardwood biomass). This disparity probably reflects the higher proportion of hardwood volume made up of species of little or no commercial value and the higher likelihood that hardwoods have fire-caused and equipment-caused defects that degrade them to the point of lowering their economic value.

## Growth, Removals, and Mortality

The net growth of growing stock on Missouri's timberland increased, on average, 602.5 million cubic feet per year (table 10). Softwood growth was 41.2 million cubic feet per year. Hardwood growth was 561.3 million cubic feet per year. Hardwood growth was 93.2 percent of the total growth, whereas the hardwood growing stock in 1989 was 90.4 percent of the total volume. The fastest growing species groups, based on 1989 volumes, included other eastern soft hardwoods, with a net increase of 43.2 million cubic feet per year, and hard maple at 11.7 million cubic feet per year. Select oaks (white and red) had a net average increase of 165.6 million cubic feet per year.

Average annual removals of growing stock on timberland (table 11) totaled 122.3 million cubic feet per year. Softwood removals were

11.4 million cubic feet per year or 9.3 percent of the total. Hardwood removals were 111.0 million cubic feet per year. Removals from private property totaled 106.5 million cubic feet per year, 87.1 percent of all removals. Public land removals averaged 15.8 million cubic feet per year. The species group category "other red oaks" had the highest average annual removals at 41.5 million cubic feet per year or 37.4 percent of the total average hardwood removal. The next highest species group was "select white oaks" at 32.9 million cubic feet per year (29.7 percent), followed by "other white oaks" at 9.4 million cubic feet per year or 8.4 percent of the hardwood total.

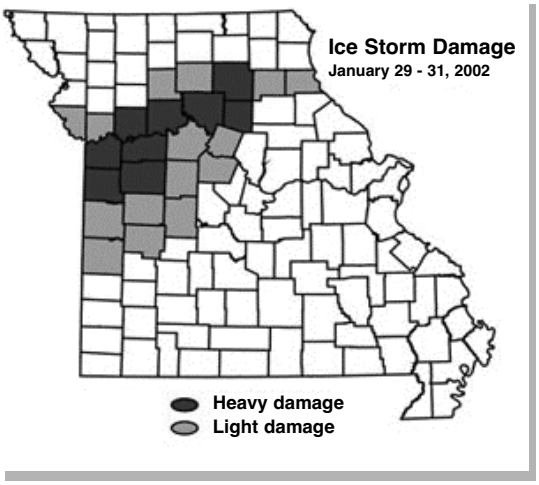
Average annual mortality of all growing stock on timberland, 1989 through 1999-2002, was 79.2 million cubic feet per year (table 12). Almost 95 percent of the total, or 75.1 million cubic feet per year, was from hardwoods, while the remaining 4.1 million cubic feet per year was from softwoods. Across all species groups, 18.5 percent or 14.7 million cubic feet per year occurred on public lands. If one looks at hardwoods alone, 17.2 percent or 12.9 million cubic feet per year of average annual mortality was on public lands, while average annual mortality of public-land softwood totaled 1.7 million cubic feet per year or 41.3 percent of all softwood mortality. Among hardwood species groups, the other red oaks category had the highest average annual mortality at 24.6 million cubic feet per year or 32.8 percent of all hardwood mortality. This species group also had the highest average annual mortality on public lands, 5.6 million cubic feet per year. The 23.0 percent of other red oak mortality that occurred on public lands was the highest percentage for all hardwoods and no doubt reflected the impact of the oak decline complex on the dense, overmature timber disproportionately represented on such lands (Lawrence *et al*. 2002).

## Forest Health

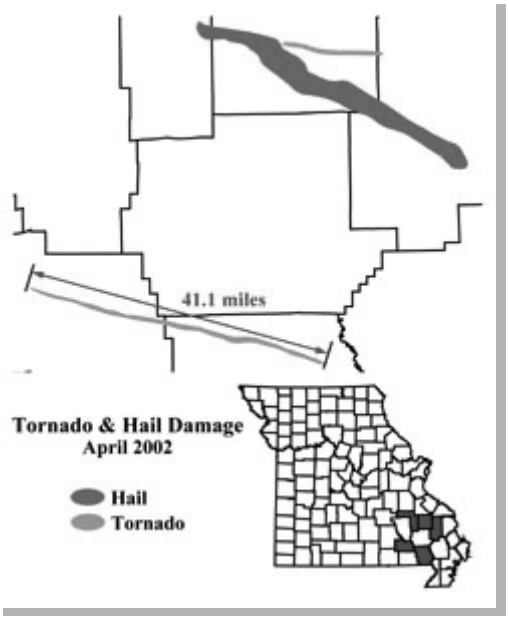
The following information about pathogens and insects affecting Missouri forests was excerpted from the national Forest Health Monitoring (FHM) program Web site at: http://www.na.fs.fed.us/spfo/fhm/fhh/fhh-02/mo/mo_02.htm.

*Floods and Drought*—The impacts of recent severe droughts, particularly in 1999 and 2000, continue to affect the health of Missouri's forests. Drought-stressed trees are undergoing increased attacks from wood-boring insects, and oak decline is an increasing problem in much of southern Missouri. The weather patterns of 2002 did little to improve these conditions. Precipitation was near or above normal in many areas during the first half of the year, but drought conditions returned to the western half of the State later in 2002. Precipitation amounts in April and May were above normal for much of the State. May was the second wettest May on record with many locations reporting 150 to 200 percent of normal precipitation. The most precipitation that month occurred in southern Missouri where localized flooding was common, and the least occurred in northwestern Missouri. Weather patterns then turned drier; moderate to severe drought conditions were present in northwestern and extreme west central Missouri by July and covered the western half of the State by November. From June to November, St. Joseph, Kansas City, and Nevada, Missouri received only 45, 43, and 51 percent, respectively, of their average precipitation. Northwestern Missouri was particularly hard hit by drought with precipitation averaging below normal for most of the year.

*Ice Storm Damage*—A major winter storm on January 29-31, 2002, brought heavy snow to northwest Missouri and severe ice damage extending from western Missouri northeastward to the north central and northeastern parts of the State. Freezing rain and sleet deposited 1 to 3 inches of ice, breaking millions of trees and utility poles, and leaving hundreds of thousands of people without electricity. The heaviest damage occurred in an area stretching from Kansas City northeast to Macon. Heavy tree damage occurred most often in urban and riparian areas. Tree species known for their susceptibility to ice damage, such as Siberian elm, ornamental pears, silver maple, and other soft maples, were hardest hit. Other species receiving significant damage included pin oak, ashes, willows, river birch, hackberry, cottonwood, and sycamore.




*Tornado and Hail Damage*—A severe weather outbreak, including tornadoes and hail in southeastern Missouri on April 24, 2002, caused extensive damage to oak and oak-pine forests. A very severe (F4) tornado traveled on the ground for over 41 miles across mostly forested land in Carter and Butler Counties covering 15,332 acres. A second, less severe tornado (F2) moved across Madison County for 13.6 miles covering 5,365 acres, damaging woodlands and destroying half the small town of Marquand. Fortunately, no deaths were reported. On that same date, a nearby hail storm damaged 67,208 acres of forest land in an area 41 miles long and 2.5 to 3.0 miles wide extending through Iron, Madison, and Bollinger Counties. Hail up to 1 inch in diameter was reported at the time.




*Oak Decline*—The ongoing decline and mortality of oaks in southern Missouri continues to worsen. Oak decline is a complex phenomenon involving primarily red oaks of advanced age that are growing on sites where competition for resources is severe, as in shallow, rocky soils, often on upper slopes and broad ridges. The drought of recent years has accelerated oak decline conditions and led to increased attacks by fungal pathogens and wood-boring insects. Armillaria root rot (*Armillaria* spp.) and Hypoxylon canker (*Hypoxylon* spp.) are commonly associated with these stands. Increased activity has been observed for several wood borers including the red oak borer (*Enaphalodes rufulus*), carpenterworms (*Prionoxystus* sp.), twolined chestnut borer (*Agrilus bilineatus)*, and a variety of other borers (Cerambycidae, Buprestidae, and Brentidae). Increasing levels of oak mortality have been reported on State, Federal, and private land. Some reports are beginning to come in of sites with high mortality among white oaks, as well as red oaks.

The impact of the high precipitation levels in April and May on red oak borer larvae survival

is not yet known. The current generation of red oak borers hatched and entered tree stems in late summer 2001 and should have completed their development and emerged as adults in June and July 2003. Many red oak borer attacks were observed to be aborted by early summer 2002, perhaps partly because of the better defensive capabilities of trees during the heavy spring rains. However, according to preliminary indications, the percentage of surviving larvae appears to be near normal when compared to historical records for red oak borers. Significant numbers of adults are still expected to emerge in 2003. And more importantly, many trees are still quite vulnerable to attack because of continuing drought.

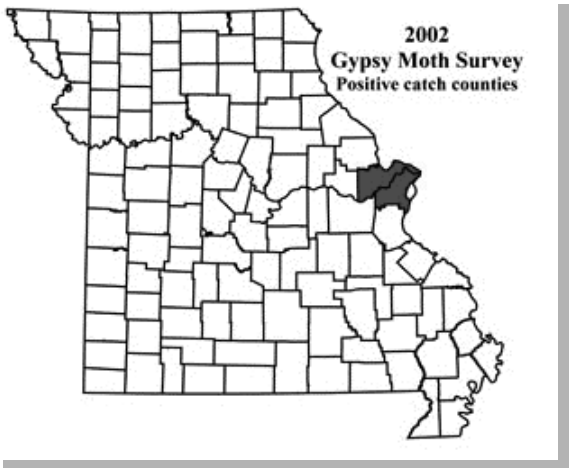
*Gypsy Moth*—The Missouri Cooperative Gypsy Moth Survey continued its annual effort to detect the presence of gypsy moths by placing and monitoring more than 11,400 traps throughout the State in 2002. A total of four moths were captured statewide, all of them in the St. Louis metropolitan area (three in St. Louis County and one in St. Charles County). This is the first year since 1991 that no moths have been captured in Stone or Taney Counties in southwestern Missouri near the popular recreation areas of Branson and Table Rock Lake. Large volumes of interstate traffic traveling to major urban and recreation areas provide opportunities for gypsy moths to repeatedly hitchhike into the State.

In spite of repeated moth captures in some areas, there are no known populations of gypsy moths in Missouri at this time. Sites where gypsy moths have been captured are surveyed with an increased trap density in the following year. In most cases, survey results in the vicinity of past captures have been negative within 1 or 2 years following the original capture. Despite these favorable past results, the risk of gypsy moths establishing in Missouri continues to increase as infested areas in nearby States expand. Statewide gypsy moth monitoring efforts will continue annually in Missouri.

## Summary

As long-term trends continue in Missouri, most measures of forested area and volume show increases. Area has increased steadily since a low point in 1972, while standing volume has continued to increase since 1947. By and large, Missouri's forests are healthy, but there are more and more indications of problems, particularly with respect to oak decline. The severity of oak decline in neighboring Arkansas suggests that Missouri forests are at risk.

As additional data become available from ensuing panels, a more precise picture of the trends of Missouri forests will emerge. Additional data related to the two most recent inventories of Missouri (1989 and 1999-2002) are available at:
http://www.ncrs.fs.fed.us/4801/fiadb/index.htm.



# APPENDIX

## Inventory Methods

Since the 1989 inventory of Missouri, several changes have been made in NCFIA inventory methods to improve the quality of the inventory as well as to meet increasing demands for timely forest resource information. The most significant difference between inventories is the change from periodic inventories to annual inventories. Historically, NCFIA periodically inventoried each State on a cycle that averaged about 12 years. However, the need for timely and consistent data across large regions, combined with national legislative mandates, resulted in NCFIA's implementation of an annual inventory system. Missouri was one of the first States in the North Central region, and in the Nation, to be inventoried with this new system, beginning with the 1999 inventory.

With an annual inventory system, about one-fifth of all field plots are measured each year. After 5 years, an entire inventory cycle will be completed. After the first 5 years, NCFIA will report and analyze results as a moving 5-year average. For example, NCFIA will be able to generate a report based on inventory results for 1999 through 2004 or for 2001 through 2006. While there are great advantages to an annual inventory, one difficulty is reporting results before an entire cycle is completed. With the 2002 annual measurements, 80 percent of all field plots have been measured. Sampling error estimates for the 2002 inventory results are area of forest land, 0.93 percent; area of timberland, 1.00 percent; number of growing-stock trees on timberland, 1.55 percent; volume of growing stock on timberland, 1.55 percent; and volume of sawtimber on timberland, 1.97 percent. These sampling error estimates are higher than those for the last periodic inventory completed in 1989 (i.e., 0.53 percent for timberland area and 1.04 percent for growing-stock volume) because of the smaller sample sizes. Thus, caution should be used when drawing conclusions based on this limited data set. As we complete ensuing measurements, we will have additional confidence in our results due to the increased number of field plots measured. As each measurement year is completed, the precision of estimates will improve.

Other significant changes between inventories include new remote sensing technology, a new field plot design, and the gathering of additional data. The advent of remote sensing technology since the previous inventory in 1989 has allowed NCFIA to use computer-assisted classifications of Multi-Resolution Land Characterization (MRLC) data and other remote sensing products to stratify the total area of the State and to improve the precision of estimates. Previous inventories in Missouri (1947, 1959, 1972, and 1989) used manual interpretation of aerial photos to stratify the State.

New algorithms were used in 1999-2002 to assign forest type and stand-size class to each condition observed on a plot. These algorithms are being used nationwide by FIA to provide consistency among States and will be used to reassign the forest type and stand-size class of every plot measured in the 1989 inventory when it is updated. This will be done so that changes in forest type and stand-size class will more accurately reflect actual changes in the forest and not changes in how values are computed. The list of recognized forest types, grouping of these forest types for reporting purposes, models used to assign stocking values to individual trees, definition of "nonstocked", and names given to the forest types changed with the new algorithms. As a result, comparisons between the published 2002 inventory results and those published for the 1989 inventory may not be valid. For additional details about algorithms used in both inventories, please contact NCFIA.

## Sampling Phases

The 2002 Missouri survey was based on a three-phase inventory. The first phase used classified satellite imagery to stratify the State and aerial photographs to select plots for measurement. The second phase entailed measurement of the traditional FIA set of mensurational variables, and the third phase focused on a set of variables related to the health of the forest.

The only land that could not be sampled was private land where field personnel could not obtain permission from the owner to measure the field plot, and plots that could not be accessed because of a hazard or danger to field personnel. The methods used in the preparation of this report make the necessary adjustments to account for sites where access was denied or hazardous.

## Phase 1

The 2002 inventory used a computer-assisted classification of satellite imagery. FIA used the imagery to form two initial strata—forest and nonforest. Pixels within 60 m (2 pixel widths) of a forest/nonforest edge formed two additional strata—forest/nonforest and nonforest/forest. Forest pixels within 60 m on the forest side of a forest/nonforest boundary were classified into a forest edge stratum. Pixels within 60 m of the boundary on the nonforest side were classified into a nonforest edge stratum. The estimated population total for a variable is the sum across all strata of the product of each stratum's estimated area and the variable's estimated mean per unit area for the stratum.

## Phase 2

Phase 2 of the inventory consisted of the measurement of the annual sample of field plots in Missouri. Current FIA precision standards for annual inventories require a sampling intensity of one plot for approximately every 6,000 acres. FIA has divided the entire area of the United States into non-overlapping hexagons, each of which contains 5,937 acres (McRoberts 1999).

An array of field plots was established by selecting one plot from each hexagon based on the following rules: (1) if an FHM plot (Mangold 1998) fell within a hexagon, it was selected; (2) if no FHM plot fell within a hexagon, the existing NCFIA plot from the 1989 inventory nearest the hexagon center was selected; and (3) if neither FHM nor existing NCFIA plots fell within the hexagon, a new NCFIA plot was established in the hexagon (McRoberts 1999). This array of plots is designated the Federal base sample and is considered an equal probability sample; its measurement in Missouri is funded by the Federal government. In addition, the Missouri Department of Conservation contributed personnel and equipment that allowed for intensified sampling in several regions of the State.

The total Federal base sample of plots was systematically divided into five interpenetrating, non-overlapping subsamples or panels. Each year the plots in a single panel are measured, and panels are selected on a 5-year, rotating basis (McRoberts 1999). For estimation purposes, the measurement of each panel of plots may be considered an independent systematic sample of all land in a State. Field crews measure vegetation on plots forested at the time of the last inventory and on plots currently classified as forest by trained photointerpreters using aerial photos or digital orthoquads.

## Phase 3

NCFIA has two categories of field plot measurements—phase 2 field plots (standard FIA plots) and phase 3 plots (forest health plots)—to optimize our ability to collect data when available for measurement. Both types of plot are uniformly distributed both geographically and temporally. Phase 3 plots are measured with the full set of FHM vegetative and health variables (Mangold 1998) collected as well as the full set of measures associated with phase 2 plots. Phase 3 plots must be measured between June 1 and August 30 to accommodate the additional measurement of non-woody understory vegetation, ground

cover, soils, and other variables. We anticipate that in Missouri the complete 5-year annual inventory will involve about 210 phase 3 plots. On the remaining plots, referred to as phase 2 plots, only variables that can be measured throughout the entire year are collected. In Missouri, the complete 5-year annual inventory is expected to involve about 3,800 phase 2 forested plots. The 2001–2002 annual inventory ("panel") results represent field measures on 753 phase 2 forested plots and 39 phase 3 plots.

The new national FIA plot design (fig. 7) was first used for data collection in Missouri in 1999, the first annual inventory year. This design was also used in the 2000, 2001, and 2002 inventories and will be used in subsequent years. The national plot design requires mapping forest conditions on each plot. Because of the small sample (20 percent) each year, precision associated with change factors such as mortality will be relatively low. When the complete annual inventory has been completed in 2003, the full range of change data will be available.

The overall plot layout for the new design consists of four subplots. The centers of subplots 2, 3, and 4 are located 120 feet from the center of subplot 1. The azimuths to subplots 2, 3, and 4 are 0, 120, and 240 degrees, respectively. The center of the new plot is located at the same point as the center of the previous plot if a previous plot existed within the sample unit. Trees with d.b.h. 5 inches and larger are measured on a 24-foot-radius (1/24 acre) circular subplot. All trees less than 5 inches d.b.h. are measured on a 6.8-foot-radius (1/300 acre) circular microplot located 12 feet east of the center of each of the four subplots. Forest conditions that occur on any of the four subplots are recorded. Factors that differentiate forest conditions are forest type, stand-size class, reserved status, ownership, and density. Each condition that occurs anywhere on any of the subplots is identified, described, and mapped if the area of the condition is 1 acre or more.

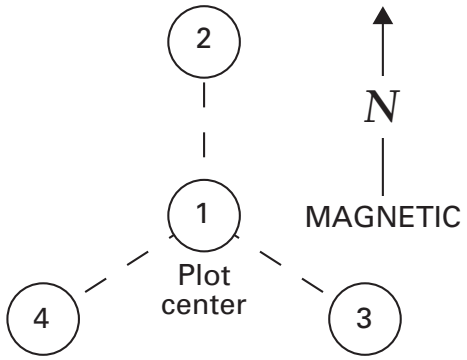



*Figure 7. — Current NCFIA field plot design.*

Field plot measurements are combined with phase 1 estimates in the compilation process and table production. The number of published tables generated from less than five panels of data is limited. Additional data related to the most recent inventories of Missouri are available at:
http://www.ncrs.fs.fed.us/4801/fiadb/index.htm.

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Missouri Department of Conservation
2901 West Truman Blvd.
Jefferson City, MO 65102
Web site: http://www.mdc.state.mo.us/forest/

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# TABLES

Table 1. -- Area of forest land by forest type group and owner category, Missouri, 1999 - 2002

(In thousand acres)

| Forest type group | Owner category | | | |
|---|---|---|---|---|
| | All owners | Public | Private | Unidentified owner |
| **Softwood type groups** | | | | |
| White / red / jack pine | 2.3 | 2.3 | - - | - - |
| Loblolly / shortleaf pine | 164.8 | 100.2 | 64.5 | - - |
| Pinyon / juniper | 435.4 | 27.8 | 407.6 | - - |
| Exotic softwood | 1.9 | 1.9 | - - | - - |
| All softwood types | 604.3 | 132.2 | 472.1 | - - |
| **Hardwood type groups** | | | | |
| Oak / pine | 1,013.1 | 278.5 | 734.6 | - - |
| Oak / hickory | 10,633.8 | 1,959.3 | 8,674.5 | - - |
| Oak / gum / cypress | 94.6 | 13.6 | 81.0 | - - |
| Elm / ash / cottonwood | 1,259.2 | 148.7 | 1,110.5 | - - |
| Maple / beech / birch | 797.3 | 87.7 | 709.6 | - - |
| All hardwood types | 13,798.0 | 2,487.8 | 11,310.2 | - - |
| Nonstocked | 51.6 | 5.4 | 46.2 | - - |
| **All forest types** | 14,453.8 | 2,625.3 | 11,828.6 | - - |

All table cells without observations in the inventory sample are indicated by --. Table value of 0.0 indicates the acres round to less than 0.1 thousand acres. Columns and rows may not add to their total due to rounding.

Table 1a. -- Area of forest land by forest type group, forest type and owner category, Missouri, 1999 - 2002

(In thousand acres)

| Forest type group/ forest type | Owner category: All owners | Public | Private | Unidentified owner |
|---|---|---|---|---|
| **Softwood type groups** | | | | |
| White / red / jack pine group | | | | |
| Eastern white pine | 2.3 | 2.3 | - - | - - |
| All forest types | 2.3 | 2.3 | - - | - - |
| Loblolly / shortleaf pine group | | | | |
| Shortleaf pine | 164.8 | 100.2 | 64.5 | - - |
| All forest types | 164.8 | 100.2 | 64.5 | - - |
| Pinyon / juniper group | | | | |
| Eastern redcedar | 435.4 | 27.8 | 407.6 | - - |
| All forest types | 435.4 | 27.8 | 407.6 | - - |
| Exotic softwood group | | | | |
| Scotch pine | 1.9 | 1.9 | - - | - - |
| All forest types | 1.9 | 1.9 | - - | - - |
| All softwood groups | 604.3 | 132.2 | 472.1 | - - |
| **Hardwood type groups** | | | | |
| Oak / pine group | | | | |
| Eastern redcedar / hardwood | 636.5 | 74.7 | 561.8 | - - |
| Shortleaf pine / oak | 376.6 | 203.8 | 172.8 | - - |
| All forest types | 1,013.1 | 278.5 | 734.6 | - - |
| Oak / hickory group | | | | |
| Oak / hickory | 0.9 | - - | 0.9 | - - |
| Post oak / blackjack oak | 1,218.4 | 145.2 | 1,073.3 | - - |
| White oak / red oak / hickory | 6,192.1 | 1,154.0 | 5,038.1 | - - |
| White oak | 1,506.1 | 304.1 | 1,202.0 | - - |
| Northern red oak | 26.2 | 13.4 | 12.9 | - - |
| Sassafras / persimmon | 77.6 | 15.3 | 62.3 | - - |
| Bur oak | 17.0 | - - | 17.0 | - - |
| Scarlet oak | 21.3 | 10.8 | 10.5 | - - |
| Black walnut | 15.1 | - - | 15.1 | - - |
| Southern scrub oak | 82.1 | 2.2 | 79.9 | - - |
| Chestnut oak / black oak / scarlet oak | 1,177.1 | 282.2 | 895.0 | - - |
| Red maple / oak | 4.3 | 4.3 | - - | - - |
| Mixed upland hardwoods | 295.4 | 27.8 | 267.5 | - - |
| All forest types | 10,633.8 | 1,959.3 | 8,674.5 | - - |
| Oak / gum / cypress group | | | | |
| Oak / gum / cypress | 45.2 | 9.3 | 35.9 | - - |
| Swamp chestnut oak / cherrybark oak | 32.9 | 4.3 | 28.6 | - - |
| Overcup oak / water hickory | 16.5 | - - | 16.5 | - - |
| All forest types | 94.6 | 13.6 | 81.0 | - - |
| Elm / ash / cottonwood group | | | | |
| Elm / ash / cottonwood | 1.9 | - - | 1.9 | - - |
| Black ash / American elm / red maple | 1,005.5 | 104.5 | 901.0 | - - |
| River birch / sycamore | 38.9 | 8.7 | 30.3 | - - |
| Cottonwood | 61.1 | 12.8 | 48.3 | - - |
| Willow | 39.8 | 6.1 | 33.7 | - - |
| Sycamore / pecan / American elm | 14.6 | 7.4 | 7.1 | - - |
| Sugarberry / hackberry / elm / green ash | 24.8 | - - | 24.8 | - - |
| Silver maple / American elm | 59.4 | 3.8 | 55.6 | - - |
| Red maple / lowland | 0.6 | 0.6 | - - | - - |
| Cottonwood / willow | 12.5 | 4.7 | 7.8 | - - |
| All forest types | 1,259.2 | 148.7 | 1,110.5 | - - |

(Table 1a continued on next page)

(Table 1a continued)

| Forest type group/ forest type | Owner category | | | |
|---|---|---|---|---|
| | All owners | Public | Private | Unidentified owner |
| **Hardwood type groups** | | | | |
| Maple / beech / birch group | | | | |
| Sugar maple / beech / yellow birch | 27.0 | 8.3 | 18.7 | - - |
| Cherry / ash / yellow-poplar | 122.7 | 13.2 | 109.5 | - - |
| Hard maple / basswood | 624.4 | 65.1 | 559.2 | - - |
| Elm / ash / locust | 23.2 | 1.1 | 22.1 | - - |
| All forest types | 797.3 | 87.7 | 709.6 | - - |
| All hardwood groups | 13,798.0 | 2,487.8 | 11,310.2 | - - |
| Nonstocked | 51.6 | 5.4 | 46.2 | - - |
| **All forest groups** | 14,453.8 | 2,625.3 | 11,828.6 | - - |

All table cells without observations in the inventory sample are indicated by --. Table value of 0.0 indicates the acres round to less than 0.1 thousand acres. Columns and rows may not add to thier total due to rounding.

Table 2. -- Area of timberland by major forest type group, stand origin, and owner category, Missouri, 1999 - 2002

(In thousand acres)

| Major forest type group and stand origin | Owner category | | | |
|---|---|---|---|---|
| | All owners | Public | Private | Unidentified owner |
| **Softwood type groups** | | | | |
| Natural | 537.2 | 93.1 | 444.1 | - - |
| Planted | 42.6 | 27.0 | 15.6 | - - |
| All softwood types | 579.7 | 120.0 | 459.7 | - - |
| **Hardwood type groups** | | | | |
| Natural | 13,424.0 | 2,241.1 | 11,182.9 | - - |
| Planted | 17.1 | 6.0 | 11.1 | - - |
| All hardwood types | 13,441.0 | 2,247.0 | 11,194.0 | - - |
| Nonstocked | 51.6 | 5.4 | 46.2 | - - |
| **All groups** | 14,072.3 | 2,372.4 | 11,699.9 | - - |

All table cells without observations in the inventory sample are indicated by --. Table value of 0.0 indicates the acres round to less than 0.1 thousand acres. Columns and rows may not add to their totals due to rounding.

Table 3. -- Area of timberland by forest type group and stand-size class, Missouri, 1999 - 2002

(In thousand acres)

| Forest type group | All stands | Stand-size class | | | |
|---|---|---|---|---|---|
| | | Sawtimber | Poletimber | Sapling-seedling | Non-stocked |
| **Softwood type groups** | | | | | |
| White / red / jack pine | 2.3 | 2.3 | - - | - - | - - |
| Loblolly / shortleaf pine | 160.2 | 109.6 | 46.3 | 4.4 | - - |
| Pinyon / juniper | 415.4 | 64.2 | 219.0 | 132.3 | - - |
| Exotic softwood | 1.9 | 1.9 | - - | - - | - - |
| All softwood types | 579.7 | 177.9 | 265.3 | 136.6 | - - |
| **Hardwood type groups** | | | | | |
| Oak / pine | 978.1 | 357.1 | 408.8 | 212.1 | - - |
| Oak / hickory | 10,372.9 | 5,603.2 | 3,908.4 | 861.3 | - - |
| Oak / gum / cypress | 94.6 | 70.4 | 13.5 | 10.6 | - - |
| Elm / ash / cottonwood | 1,223.7 | 647.7 | 343.5 | 232.5 | - - |
| Maple / beech / birch | 771.7 | 323.5 | 221.3 | 226.9 | - - |
| All hardwood types | 13,441.0 | 7,002.0 | 4,895.4 | 1,543.5 | - - |
| Nonstocked | 51.6 | - - | - - | - - | 51.6 |
| **All forest types** | 14,072.3 | 7,179.9 | 5,160.7 | 1,680.1 | 51.6 |

All table cells without observations in the inventory sample are indicated by --. Table value of 0.0 indicates the acres round to less than 0.1 thousand acres. Columns and rows may not add to their totals due to rounding.

Table 3a. -- Area of timberland by forest type group, forest type and stand-size class, Missouri, 1999 - 2002

(In thousand acres)

| Forest type group/ forest type | Stand-size class | | | | |
|---|---|---|---|---|---|
| | All stands | Sawtimber | Poletimber | Sapling-seedling | Non-stocked |
| **Softwood type groups** | | | | | |
| White / red / jack pine group | | | | | |
| Eastern white pine | 2.3 | 2.3 | - - | - - | - - |
| All forest types | 2.3 | 2.3 | - - | - - | - - |
| Loblolly / shortleaf pine group | | | | | |
| Shortleaf pine | 160.2 | 109.6 | 46.3 | 4.4 | - - |
| All forest types | 160.2 | 109.6 | 46.3 | 4.4 | - - |
| Pinyon / juniper group | | | | | |
| Eastern redcedar | 415.4 | 64.2 | 219.0 | 132.3 | - - |
| All forest types | 415.4 | 64.2 | 219.0 | 132.3 | - - |
| Exotic softwood group | | | | | |
| Scotch pine | 1.9 | 1.9 | - - | - - | - - |
| All forest types | 1.9 | 1.9 | - - | - - | - - |
| All softwood groups | 579.7 | 177.9 | 265.3 | 136.6 | - - |
| **Hardwood type groups** | | | | | |
| Oak / pine group | | | | | |
| Eastern redcedar / hardwood | 601.5 | 113.7 | 298.1 | 189.7 | - - |
| Shortleaf pine / oak | 376.6 | 243.4 | 110.7 | 22.5 | - - |
| All forest types | 978.1 | 357.1 | 408.8 | 212.1 | - - |
| Oak / hickory group | | | | | |
| Oak / hickory | 0.9 | - - | - - | 0.9 | - - |
| Post oak / blackjack oak | 1,137.0 | 457.6 | 606.8 | 72.5 | - - |
| White oak / red oak / hickory | 6,057.0 | 3,230.2 | 2,190.8 | 636.0 | - - |
| White oak | 1,493.1 | 975.9 | 497.3 | 19.9 | - - |
| Northern red oak | 26.2 | 21.5 | 4.7 | - - | - - |
| Sassafras / persimmon | 75.2 | 4.5 | 17.1 | 53.5 | - - |
| Bur oak | 17.0 | 15.4 | - - | 1.6 | - - |
| Scarlet oak | 17.0 | 7.6 | 9.4 | - - | - - |
| Black walnut | 15.1 | 10.3 | 3.1 | 1.7 | - - |
| Southern scrub oak | 82.1 | 49.8 | 32.2 | - - | - - |
| Chestnut oak / black oak / scarlet oak | 1,152.5 | 705.4 | 402.3 | 44.8 | - - |
| Red maple / oak | 4.3 | - - | - - | 4.3 | - - |
| Mixed upland hardwoods | 295.4 | 125.0 | 144.5 | 25.9 | - - |
| All forest types | 10,372.9 | 5,603.2 | 3,908.4 | 861.3 | - - |
| Oak / gum / cypress group | | | | | |
| Oak / gum / cypress | 45.2 | 28.8 | 5.7 | 10.6 | - - |
| Swamp chestnut oak / cherrybark oak | 32.9 | 27.0 | 6.0 | - - | - - |
| Overcup oak / water hickory | 16.5 | 14.6 | 1.9 | - - | - - |
| All forest types | 94.6 | 70.4 | 13.5 | 10.6 | - - |
| Elm / ash / cottonwood group | | | | | |
| Elm / ash / cottonwood | 1.9 | 1.9 | - - | - - | - - |
| Black ash / American elm / red maple | 977.6 | 500.4 | 300.6 | 176.5 | - - |
| River birch / sycamore | 31.3 | 26.6 | 4.7 | - - | - - |
| Cottonwood | 61.1 | 44.1 | 6.5 | 10.6 | - - |
| Willow | 39.8 | 15.5 | 1.8 | 22.5 | - - |
| Sycamore / pecan / American elm | 14.6 | 6.1 | 8.5 | - - | - - |
| Sugarberry / hackberry / elm / green ash | 24.8 | 8.7 | 7.1 | 9.1 | - - |
| Silver maple / American elm | 59.4 | 39.7 | 7.6 | 12.2 | - - |
| Red maple / lowland | 0.6 | - - | - - | 0.6 | - - |
| Cottonwood / willow | 12.5 | 4.7 | 6.8 | 1.1 | - - |
| All forest types | 1,223.7 | 647.7 | 343.5 | 232.5 | - - |

(Table 3a continued on next page)

(Table 3a continued)

| Forest type group/ forest type | Stand-size class | | | | |
|---|---|---|---|---|---|
| | All stands | Sawtimber | Poletimber | Sapling-seedling | Non-stocked |
| **Hardwood type groups** | | | | | |
| Maple / beech / birch group | | | | | |
| Sugar maple / beech / yellow birch | 18.7 | 9.7 | 1.4 | 7.6 | - - |
| Cherry / ash / yellow-poplar | 119.3 | 30.1 | 57.5 | 31.8 | - - |
| Hard maple / basswood | 610.5 | 276.6 | 162.4 | 171.4 | - - |
| Elm / ash / locust | 23.2 | 7.1 | - - | 16.1 | - - |
| All forest types | 771.7 | 323.5 | 221.3 | 226.9 | - - |
| All hardwood groups | 13,441.0 | 7,002.0 | 4,895.4 | 1,543.5 | - - |
| Nonstocked | 51.6 | - - | - - | - - | 51.6 |
| **All forest groups** | 14,072.3 | 7,179.9 | 5,160.7 | 1,680.1 | 51.6 |

All table cells without observations in the inventory sample are indicated by --. Table value of 0.0 indicates the acres round to less than 0.1 thousand acres. Columns and rows may not add to thier total due to rounding.

Table 4. -- Net volume of all live trees on forest land by species group and owner category, Missouri, 1999 - 2002

(In thousand cubic feet)

| Species group | Owner category | | | |
|---|---|---|---|---|
| | All owners | Public | Private | Unidentified owner |
| **Softwoods** | | | | |
| Loblolly and shortleaf pines | 791,695 | 469,803 | 321,893 | - - |
| Other yellow pines | 965 | 583 | 381 | - - |
| Eastern white and red pines | 6,829 | 5,647 | 1,182 | - - |
| Cypress | 393 | - - | 393 | - - |
| Other eastern softwoods | 519,455 | 52,144 | 467,311 | - - |
| Total softwoods | 1,319,338 | 528,177 | 791,161 | - - |
| **Hardwoods** | | | | |
| Select white oaks | 4,056,661 | 860,491 | 3,196,170 | - - |
| Select red oaks | 1,059,536 | 218,899 | 840,638 | - - |
| Other white oaks | 1,855,958 | 253,247 | 1,602,711 | - - |
| Other red oaks | 4,015,324 | 887,899 | 3,127,425 | - - |
| Hickory | 1,628,472 | 257,151 | 1,371,321 | - - |
| Hard maple | 249,599 | 29,032 | 220,567 | - - |
| Soft maple | 388,099 | 68,815 | 319,284 | - - |
| Beech | 9,976 | 7,035 | 2,941 | - - |
| Sweetgum | 29,497 | 8,400 | 21,097 | - - |
| Tupelo and blackgum | 90,304 | 23,994 | 66,310 | - - |
| Ash | 384,247 | 27,753 | 356,494 | - - |
| Cottonwood and aspen | 148,812 | 37,239 | 111,573 | - - |
| Basswood | 39,648 | 3,049 | 36,599 | - - |
| Yellow-poplar | 27,675 | 15,342 | 12,334 | - - |
| Black walnut | 474,967 | 63,782 | 411,185 | - - |
| Other eastern soft hardwoods | 1,332,920 | 139,232 | 1,193,687 | - - |
| Other eastern hard hardwoods | 424,243 | 35,934 | 388,309 | - - |
| Eastern noncommercial hardwoods | 124,728 | 6,101 | 118,627 | - - |
| Total hardwoods | 16,340,668 | 2,943,397 | 13,397,271 | - - |
| **All species groups** | 17,660,007 | 3,471,574 | 14,188,432 | - - |

All table cells without observations in the inventory sample are indicated by --. Table value of 0 indicates that the volume rounds to less than 1 thousand cubic feet. Columns and rows may not add to their totals due to rounding.

Table 4a. -- Net volume of all live trees on forest land by species group, species and owner category, Missouri, 1999 - 2002

(In thousand cubic feet)

| Species group/ species | Owner category | | | |
|---|---|---|---|---|
| | All owners | Public | Private | Unidentified owner |
| **Softwoods** | | | | |
| Loblolly and shortleaf pines | | | | |
| Shortleaf pine | 791,334 | 469,442 | 321,893 | - - |
| Loblolly pine | 361 | 361 | - - | - - |
| All species | 791,695 | 469,803 | 321,893 | - - |
| Other yellow pines | | | | |
| Scotch pine | 965 | 583 | 381 | - - |
| All species | 965 | 583 | 381 | - - |
| Eastern white and red pines | | | | |
| Eastern white pine | 6,829 | 5,647 | 1,182 | - - |
| All species | 6,829 | 5,647 | 1,182 | - - |
| Cypress | | | | |
| Baldcypress | 393 | - - | 393 | - - |
| All species | 393 | - - | 393 | - - |
| Other eastern softwoods | | | | |
| Eastern redcedar | 519,455 | 52,144 | 467,311 | - - |
| All species | 519,455 | 52,144 | 467,311 | - - |
| Total softwoods | 1,319,338 | 528,177 | 791,161 | - - |
| **Hardwoods** | | | | |
| Select white oaks | | | | |
| White oak | 3,543,976 | 792,532 | 2,751,444 | - - |
| Swamp white oak | 68,149 | 3,324 | 64,825 | - - |
| Bur oak | 101,228 | 13,300 | 87,928 | - - |
| Swamp chestnut oak | 9,049 | 4,479 | 4,569 | - - |
| Chinkapin oak | 334,259 | 46,856 | 287,403 | - - |
| All species | 4,056,661 | 860,491 | 3,196,170 | - - |
| Select red oaks | | | | |
| Cherrybark oak | 6,853 | 1,143 | 5,711 | - - |
| Northern red oak | 977,092 | 208,579 | 768,512 | - - |
| Shumard oak | 75,591 | 9,177 | 66,414 | - - |
| All species | 1,059,536 | 218,899 | 840,638 | - - |
| Other white oaks | | | | |
| Overcup oak | 13,308 | 12,458 | 850 | - - |
| Chestnut oak | 793 | 640 | 153 | - - |
| Post oak | 1,841,857 | 240,148 | 1,601,708 | - - |
| All species | 1,855,958 | 253,247 | 1,602,711 | - - |
| Other red oaks | | | | |
| Scarlet oak | 582,153 | 255,495 | 326,658 | - - |
| Northern pin oak | 3,318 | 981 | 2,337 | - - |
| Southern red oak | 63,037 | 17,146 | 45,891 | - - |
| Shingle oak | 207,157 | 9,156 | 198,001 | - - |
| Blackjack oak | 234,811 | 18,111 | 216,701 | - - |
| Pin oak | 178,352 | 21,126 | 157,226 | - - |
| Willow oak | 5,568 | 1,691 | 3,877 | - - |
| Black oak | 2,740,928 | 564,193 | 2,176,734 | - - |
| All species | 4,015,324 | 887,899 | 3,127,425 | - - |

(Table 4a continued on next page)

(Table 4a continued)

| Species group/ species | Owner category: All owners | Public | Private | Unidentified owner |
|---|---|---|---|---|
| **Hardwoods** | | | | |
| Hickory | | | | |
| Bitternut hickory | 204,102 | 25,320 | 178,782 | - - |
| Pignut hickory | 161,336 | 30,871 | 130,465 | - - |
| Pecan | 33,844 | 2,399 | 31,445 | - - |
| Shellbark hickory | 42,585 | 8,602 | 33,983 | - - |
| Shagbark hickory | 460,913 | 37,982 | 422,932 | - - |
| Black hickory | 401,137 | 84,658 | 316,479 | - - |
| Mockernut hickory | 324,555 | 67,320 | 257,235 | - - |
| All species | 1,628,472 | 257,151 | 1,371,321 | - - |
| Hard maple | | | | |
| Black maple | 3,482 | - - | 3,482 | - - |
| Sugar maple | 246,117 | 29,032 | 217,085 | - - |
| All species | 249,599 | 29,032 | 220,567 | - - |
| Soft maple | | | | |
| Red maple | 54,370 | 10,590 | 43,780 | - - |
| Silver maple | 333,729 | 58,225 | 275,504 | - - |
| All species | 388,099 | 68,815 | 319,284 | - - |
| Beech | | | | |
| American beech | 9,976 | 7,035 | 2,941 | - - |
| All species | 9,976 | 7,035 | 2,941 | - - |
| Sweetgum | | | | |
| Sweetgum | 29,497 | 8,400 | 21,097 | - - |
| All species | 29,497 | 8,400 | 21,097 | - - |
| Tupelo and blackgum | | | | |
| Water tupelo | 13,209 | 62 | 13,147 | - - |
| Blackgum | 76,630 | 23,933 | 52,698 | - - |
| Swamp tupelo | 465 | - - | 465 | - - |
| All species | 90,304 | 23,994 | 66,310 | - - |
| Ash | | | | |
| White ash | 213,223 | 16,225 | 196,998 | - - |
| Green ash | 164,290 | 11,225 | 153,065 | - - |
| Blue ash | 6,733 | 303 | 6,430 | - - |
| All species | 384,247 | 27,753 | 356,494 | - - |
| Cottonwood and aspen | | | | |
| Eastern cottonwood | 148,812 | 37,239 | 111,573 | - - |
| All species | 148,812 | 37,239 | 111,573 | - - |
| Basswood | | | | |
| American basswood | 39,648 | 3,049 | 36,599 | - - |
| All species | 39,648 | 3,049 | 36,599 | - - |
| Yellow-poplar | | | | |
| Yellow-poplar | 27,675 | 15,342 | 12,334 | - - |
| All species | 27,675 | 15,342 | 12,334 | - - |
| Black walnut | | | | |
| Black walnut | 474,967 | 63,782 | 411,185 | - - |
| All species | 474,967 | 63,782 | 411,185 | - - |

(Table 4a continued on next page)

(Table 4a continued)

| Species group/ species | Owner category: All owners | Public | Private | Unidentified owner |
|---|---|---|---|---|
| **Hardwoods** | | | | |
| Other eastern soft hardwoods | | | | |
| Boxelder | 59,382 | 10,147 | 49,235 | - - |
| Ohio buckeye | 5,811 | 1,157 | 4,654 | - - |
| River birch | 36,882 | 684 | 36,198 | - - |
| Northern catalpa | 593 | - - | 593 | - - |
| Sugarberry | 6,138 | 713 | 5,425 | - - |
| Hackberry | 281,463 | 11,955 | 269,508 | - - |
| Butternut | 7,291 | 4,704 | 2,587 | - - |
| Sycamore | 279,189 | 39,206 | 239,984 | - - |
| Black cherry | 94,725 | 7,197 | 87,527 | - - |
| Black willow | 41,353 | 9,547 | 31,807 | - - |
| Sassafras | 36,627 | 3,549 | 33,077 | - - |
| Winged elm | 21,664 | 5,219 | 16,446 | - - |
| American elm | 336,194 | 24,861 | 311,333 | - - |
| Siberian elm | 5,188 | - - | 5,188 | - - |
| Slippery elm | 120,420 | 20,293 | 100,127 | - - |
| All species | 1,332,920 | 139,232 | 1,193,687 | - - |
| Other eastern hard hardwoods | | | | |
| Flowering dogwood | 10,046 | 2,113 | 7,933 | - - |
| Common persimmon | 28,504 | 2,821 | 25,683 | - - |
| Honeylocust | 248,659 | 12,524 | 236,135 | - - |
| Kentucky coffeetree | 11,744 | 888 | 10,856 | - - |
| White mulberry | 10,094 | 248 | 9,846 | - - |
| Red mulberry | 68,078 | 9,583 | 58,495 | - - |
| Black locust | 47,119 | 7,757 | 39,361 | - - |
| All species | 424,243 | 35,934 | 388,309 | - - |
| Eastern noncommercial hardwoods | | | | |
| Ailanthus | 90 | - - | 90 | - - |
| Serviceberry | 335 | 180 | 155 | - - |
| Pawpaw | 104 | - - | 104 | - - |
| Chittamwood, gum bumelia | 1,276 | 218 | 1,057 | - - |
| American hornbeam, musclewood | 574 | 182 | 392 | - - |
| Eastern redbud | 11,428 | 1,680 | 9,748 | - - |
| Hawthorn | 346 | 65 | 281 | - - |
| Cockspur hawthorn | 50 | - - | 50 | - - |
| Osage-orange | 106,559 | 3,218 | 103,341 | - - |
| Apple spp. | 23 | - - | 23 | - - |
| Eastern hophornbeam | 3,264 | 84 | 3,180 | - - |
| Cherry and plum spp. | - - | - - | - - | - - |
| Wild plum | 361 | 333 | 28 | - - |
| Peachleaf willow | 68 | 68 | - - | - - |
| Smoketree | 136 | 72 | 64 | - - |
| Other, unknown | 114 | - - | 114 | - - |
| All species | 124,728 | 6,101 | 118,627 | - - |
| Total hardwoods | 16,340,668 | 2,943,397 | 13,397,271 | - - |
| **All species groups** | 17,660,007 | 3,471,574 | 14,188,432 | - - |

All table cells without observations in the inventory sample are indicated by --. Table value of 0.0 indicates the acres round to less than 0.1 thousand acres. Columns and rows may not add to thier total due to rounding.

Table 5. -- Net volume of all live trees and salvable dead trees on timberland by class of timber and softwood/hardwood species, Missouri, 1999 - 2002

(In thousand cubic feet)

| Class of timber | All species | Softwood species | Hardwood species |
|---|---|---|---|
| **Live trees** | | | |
| **Growing-stock trees** | | | |
| Sawtimber | | | |
| Saw log portion | 7,904,831 | 682,206 | 7,222,624 |
| Upper stem portion | 1,443,443 | 89,365 | 1,354,078 |
| Total | 9,348,273 | 771,572 | 8,576,702 |
| Poletimber | 4,853,046 | 403,577 | 4,449,469 |
| **All growing-stock trees** | 14,201,320 | 1,175,149 | 13,026,171 |
| **Cull trees** | | | |
| Rough trees [1] | | | |
| Sawtimber size | 1,841,306 | 59,749 | 1,781,557 |
| Poletimber size | 810,727 | 39,598 | 771,128 |
| Total | 2,652,033 | 99,348 | 2,552,685 |
| Rotten trees [1] | | | |
| Sawtimber size | 310,336 | 1,100 | 309,236 |
| Poletimber size | 35,512 | 292 | 35,219 |
| Total | 345,848 | 1,392 | 344,455 |
| **All live cull trees** | 2,997,880 | 100,740 | 2,897,141 |
| **All live trees** | 17,199,200 | 1,275,889 | 15,923,312 |
| **Salvable dead trees** | | | |
| Sawtimber size | 98,368 | 3,379 | 94,989 |
| Poletimber size | 82,788 | 3,647 | 79,141 |
| **All salvable dead trees** | 181,156 | 7,026 | 174,130 |
| **All classes** | 17,380,356 | 1,282,914 | 16,097,441 |

All table cells without observations in the inventory sample are indicated by --. Table value of 0 indicates that the volume rounds to less than 1 thousand cubic feet. Columns and rows may not add to their totals due to rounding.

[1] Includes noncommercial species.

Table 6. -- Net volume of growing stock on timberland by forest type group and softwood/hardwood species, Missouri, 1999 - 2002

(In thousand cubic feet)

| Forest type group | All species | Softwood species | Hardwood species |
|---|---|---|---|
| **Softwood type groups** | | | |
| White / red / jack pine | 4,989 | 4,703 | 286 |
| Loblolly / shortleaf pine | 291,881 | 251,586 | 40,295 |
| Pinyon / juniper | 199,345 | 141,089 | 58,256 |
| Exotic softwood | 415 | 415 | - - |
| All softwood types | 496,630 | 397,793 | 98,838 |
| **Hardwood type groups** | | | |
| Oak / pine | 827,586 | 411,393 | 416,194 |
| Oak / hickory | 11,028,240 | 350,150 | 10,678,090 |
| Oak / gum / cypress | 156,415 | - - | 156,415 |
| Elm / ash / cottonwood | 1,157,518 | 2,893 | 1,154,625 |
| Maple / beech / birch | 533,530 | 12,811 | 520,719 |
| All hardwood types | 13,703,289 | 777,246 | 12,926,043 |
| Nonstocked | 1,400 | 110 | 1,290 |
| **All forest types** | 14,201,320 | 1,175,149 | 13,026,171 |

All table cells without observations in the inventory sample are indicated by --. Table value of 0 indicates that the volume rounds to less than 1 thousand cubic feet. Columns and rows may not add to their totals due to rounding.

Table 6a. -- Net volume of growing stock on timberland by forest type group, forest type and softwood/hardwood species, Missouri, 1999 - 2002

(In thousand cubic feet)

| Forest type group/ forest type | All species | Softwood species | Hardwood species |
|---|---|---|---|
| **Softwood type groups** | | | |
| White / red / jack pine group | | | |
| Eastern white pine | 4,989 | 4,703 | 286 |
| All forest types | 4,989 | 4,703 | 286 |
| Loblolly / shortleaf pine group | | | |
| Shortleaf pine | 291,881 | 251,586 | 40,295 |
| All forest types | 291,881 | 251,586 | 40,295 |
| Pinyon / juniper group | | | |
| Eastern redcedar | 199,345 | 141,089 | 58,256 |
| All forest types | 199,345 | 141,089 | 58,256 |
| Exotic softwood group | | | |
| Scotch pine | 415 | 415 | - - |
| All forest types | 415 | 415 | - - |
| All softwood groups | 496,630 | 397,793 | 98,838 |
| **Hardwood type groups** | | | |
| Oak / pine group | | | |
| Eastern redcedar / hardwood | 306,867 | 122,457 | 184,410 |
| Shortleaf pine / oak | 520,720 | 288,936 | 231,784 |
| All forest types | 827,586 | 411,393 | 416,194 |
| Oak / hickory group | | | |
| Post oak / blackjack oak | 1,056,902 | 39,549 | 1,017,353 |
| White oak / red oak / hickory | 6,209,432 | 224,863 | 5,984,569 |
| White oak | 1,933,425 | 33,902 | 1,899,522 |
| Northern red oak | 44,022 | 44 | 43,978 |
| Sassafras / persimmon | 16,291 | 1,791 | 14,500 |
| Bur oak | 11,424 | - - | 11,424 |
| Scarlet oak | 21,335 | 738 | 20,597 |
| Black walnut | 10,109 | - - | 10,109 |
| Southern scrub oak | 72,456 | 5,859 | 66,597 |
| Chestnut oak / black oak / scarlet oak | 1,368,437 | 38,089 | 1,330,348 |
| Red maple / oak | 742 | - - | 742 |
| Mixed upland hardwoods | 283,664 | 5,313 | 278,350 |
| All forest types | 11,028,240 | 350,150 | 10,678,090 |
| Oak / gum / cypress group | | | |
| Oak / gum / cypress | 71,282 | - - | 71,282 |
| Swamp chestnut oak / cherrybark oak | 68,247 | - - | 68,247 |
| Overcup oak / water hickory | 16,885 | - - | 16,885 |
| All forest types | 156,415 | - - | 156,415 |

(Table 6a continued on next page)

(Table 6a continued)

| Forest type group/ forest type | All species | Softwood species | Hardwood species |
|---|---|---|---|
| **Hardwood type groups** | | | |
| Elm / ash / cottonwood group | | | |
| Black ash / American elm / red maple | 856,054 | 2,085 | 853,969 |
| River birch / sycamore | 43,133 | 365 | 42,767 |
| Cottonwood | 104,554 | 210 | 104,344 |
| Willow | 18,792 | - - | 18,792 |
| Sycamore / pecan / American elm | 8,316 | 232 | 8,083 |
| Sugarberry / hackberry / elm / green ash | 29,411 | - - | 29,411 |
| Silver maple / American elm | 83,420 | - - | 83,420 |
| Cottonwood / willow | 13,838 | - - | 13,838 |
| All forest types | 1,157,518 | 2,893 | 1,154,625 |
| Maple / beech / birch group | | | |
| Sugar maple / beech / yellow birch | 16,711 | 104 | 16,607 |
| Cherry / ash / yellow-poplar | 72,701 | 644 | 72,057 |
| Hard maple / basswood | 437,859 | 12,063 | 425,796 |
| Elm / ash / locust | 6,259 | - - | 6,259 |
| All forest types | 533,530 | 12,811 | 520,719 |
| All hardwood groups | 13,703,289 | 777,246 | 12,926,043 |
| Nonstocked | 1,400 | 110 | 1,290 |
| **All forest groups** | 14,201,320 | 1,175,149 | 13,026,171 |

All table cells without observations in the inventory sample are indicated by --. Table value of 0.0 indicates the acres round to less than 0.1 thousand acres. Columns and rows may not add to thier total due to rounding.

Table 7. -- Net volume of growing stock on timberland by species group and diameter class, Missouri, 1999 - 2002

(In thousand cubic feet)

| Species group | All classes | Diameter class (inches at breast height) | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | 5.0-6.9 | 7.0-8.9 | 9.0-10.9 | 11.0-12.9 | 13.0-14.9 | 15.0-16.9 | 17.0-18.9 | 19.0-20.9 | 21.0-28.9 | 29.0+ |
| **Softwoods** | | | | | | | | | | | |
| Loblolly and shortleaf pines | 763,152 | 55,666 | 105,575 | 159,307 | 170,374 | 127,610 | 77,252 | 35,036 | 27,948 | 4,385 | - - |
| Other yellow pines | 583 | 31 | 138 | 415 | - - | - - | - - | - - | - - | - - | - - |
| Eastern white and red pines | 5,786 | - - | 537 | 572 | 1,636 | 3,041 | - - | - - | - - | - - | - - |
| Cypress | 393 | - - | - - | - - | 393 | - - | - - | - - | - - | - - | - - |
| Other eastern softwoods | 405,233 | 126,671 | 114,960 | 81,278 | 39,978 | 29,420 | 7,896 | 856 | 2,113 | 2,061 | - - |
| Total softwoods | 1,175,149 | 182,367 | 221,210 | 241,572 | 212,382 | 160,071 | 85,148 | 35,891 | 30,061 | 6,446 | - - |
| **Hardwoods** | | | | | | | | | | | |
| Select white oaks | 3,362,294 | 228,856 | 347,201 | 465,901 | 539,175 | 527,600 | 445,212 | 313,737 | 194,997 | 252,869 | 46,745 |
| Select red oaks | 895,059 | 36,959 | 62,083 | 81,642 | 95,936 | 122,927 | 122,532 | 109,093 | 111,231 | 133,918 | 18,737 |
| Other white oaks | 1,420,492 | 147,213 | 242,415 | 267,866 | 235,097 | 203,294 | 152,631 | 74,708 | 41,500 | 29,890 | 25,878 |
| Other red oaks | 3,431,249 | 212,270 | 332,624 | 472,363 | 574,420 | 562,074 | 456,677 | 310,921 | 210,659 | 266,758 | 32,482 |
| Hickory | 1,394,012 | 183,913 | 237,549 | 243,245 | 245,762 | 166,323 | 130,974 | 84,627 | 45,367 | 56,251 | - - |
| Hard maple | 186,721 | 30,617 | 28,542 | 35,250 | 26,840 | 17,157 | 11,638 | 15,545 | 14,501 | 6,632 | - - |
| Soft maple | 223,238 | 13,242 | 16,877 | 18,461 | 17,595 | 17,352 | 37,394 | 15,335 | 24,812 | 56,988 | 5,181 |
| Beech | 829 | - - | 138 | 230 | - - | 460 | - - | - - | - - | - - | - - |
| Sweetgum | 24,604 | 1,128 | 3,026 | 3,035 | 3,169 | 2,421 | 4,323 | 6,021 | 1,481 | - - | - - |
| Tupelo and blackgum | 75,780 | 13,105 | 11,533 | 12,026 | 9,851 | 10,549 | 8,970 | 2,973 | 4,886 | 1,887 | - - |
| Ash | 286,423 | 25,991 | 37,523 | 43,998 | 44,733 | 37,523 | 44,423 | 18,363 | 17,087 | 16,781 | - - |
| Cottonwood and aspen | 136,764 | 1,211 | 502 | 1,183 | 6,096 | 696 | 9,818 | 16,800 | 17,240 | 16,308 | 66,911 |
| Basswood | 31,041 | 907 | 2,413 | 3,555 | 4,088 | 2,132 | 2,948 | 1,982 | 2,558 | 10,458 | - - |
| Yellow-poplar | 16,983 | 362 | 453 | 983 | 2,176 | 4,550 | 3,623 | 1,293 | 3,543 | - - | - - |
| Black walnut | 358,388 | 17,574 | 33,743 | 45,281 | 68,811 | 52,833 | 40,128 | 40,760 | 27,861 | 31,397 | - - |
| Other eastern soft hardwoods | 969,499 | 125,851 | 134,160 | 128,317 | 134,296 | 117,923 | 89,960 | 89,996 | 58,578 | 74,449 | 15,969 |
| Other eastern hard hardwoods | 212,795 | 28,216 | 34,053 | 33,883 | 27,562 | 30,569 | 10,659 | 17,694 | 21,668 | 2,078 | 6,412 |
| Total hardwoods | 13,026,171 | 1,067,415 | 1,524,836 | 1,857,218 | 2,035,608 | 1,876,384 | 1,571,910 | 1,119,848 | 797,969 | 956,666 | 218,315 |
| **All species** | 14,201,320 | 1,249,783 | 1,746,046 | 2,098,790 | 2,247,991 | 2,036,455 | 1,657,058 | 1,155,739 | 828,030 | 963,112 | 218,315 |

All table cells without observations in the inventory sample are indicated by --. Table value of 0 indicates that the volume rounds to less than 1 thousand cubic feet. Columns and rows may not add to their totals due to rounding.

Table 7a. -- Net volume of growing stock on timberland by species group, species and diameter class, Missouri, 1999 - 2002

(In thousand cubic feet)

| Species group/ species | All classes | Diameter class (inches at breast height) | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | 5.0-6.9 | 7.0-8.9 | 9.0-10.9 | 11.0-12.9 | 13.0-14.9 | 15.0-16.9 | 17.0-18.9 | 19.0-20.9 | 21.0-28.9 | 29.0+ |
| **Softwoods** | | | | | | | | | | | |
| Loblolly and shortleaf pines | | | | | | | | | | | |
| Shortleaf pine | 763,152 | 55,666 | 105,575 | 159,307 | 170,374 | 127,610 | 77,252 | 35,036 | 27,948 | 4,385 | - - |
| All species | 763,152 | 55,666 | 105,575 | 159,307 | 170,374 | 127,610 | 77,252 | 35,036 | 27,948 | 4,385 | - - |
| Other yellow pines | | | | | | | | | | | |
| Scotch pine | 583 | 31 | 138 | 415 | - - | - - | - - | - - | - - | - - | - - |
| All species | 583 | 31 | 138 | 415 | - - | - - | - - | - - | - - | - - | - - |
| Eastern white and red pines | | | | | | | | | | | |
| Eastern white pine | 5,786 | - - | 537 | 572 | 1,636 | 3,041 | - - | - - | - - | - - | - - |
| All species | 5,786 | - - | 537 | 572 | 1,636 | 3,041 | - - | - - | - - | - - | - - |
| Cypress | | | | | | | | | | | |
| Baldcypress | 393 | - - | - - | - - | 393 | - - | - - | - - | - - | - - | - - |
| All species | 393 | - - | - - | - - | 393 | - - | - - | - - | - - | - - | - - |
| Other eastern softwoods | | | | | | | | | | | |
| Eastern redcedar | 405,233 | 126,671 | 114,960 | 81,278 | 39,978 | 29,420 | 7,896 | 856 | 2,113 | 2,061 | - - |
| All species | 405,233 | 126,671 | 114,960 | 81,278 | 39,978 | 29,420 | 7,896 | 856 | 2,113 | 2,061 | - - |
| Total softwoods | 1,175,149 | 182,367 | 221,210 | 241,572 | 212,382 | 160,071 | 85,148 | 35,891 | 30,061 | 6,446 | - - |
| **Hardwoods** | | | | | | | | | | | |
| Select white oaks | | | | | | | | | | | |
| White oak | 3,062,889 | 208,357 | 315,205 | 427,669 | 498,654 | 493,292 | 400,758 | 292,426 | 185,293 | 207,398 | 33,837 |
| Swamp white oak | 50,912 | 2,276 | 3,031 | 7,744 | 6,571 | 4,441 | 12,489 | 4,779 | 3,929 | 5,653 | - - |
| Bur oak | 61,291 | 2,449 | 3,468 | 3,216 | 7,508 | 6,080 | 8,442 | 1,769 | - - | 19,929 | 8,429 |
| Swamp chestnut oak | 9,049 | 128 | - - | - - | 292 | - - | - - | - - | 2,344 | 1,805 | 4,479 |
| Chinkapin oak | 178,153 | 15,645 | 25,497 | 27,273 | 26,150 | 23,787 | 23,522 | 14,764 | 3,432 | 18,084 | - - |
| All species | 3,362,294 | 228,856 | 347,201 | 465,901 | 539,175 | 527,600 | 445,212 | 313,737 | 194,997 | 252,869 | 46,745 |
| Select red oaks | | | | | | | | | | | |
| Cherrybark oak | 6,853 | 253 | 340 | 218 | 916 | - - | 3,851 | 1,275 | - - | - - | - - |
| Northern red oak | 829,238 | 32,109 | 56,839 | 74,845 | 89,114 | 111,758 | 112,560 | 104,545 | 109,469 | 119,262 | 18,737 |
| Shumard oak | 58,967 | 4,597 | 4,903 | 6,578 | 5,906 | 11,170 | 6,122 | 3,273 | 1,762 | 14,656 | - - |
| All species | 895,059 | 36,959 | 62,083 | 81,642 | 95,936 | 122,927 | 122,532 | 109,093 | 111,231 | 133,918 | 18,737 |
| Other white oaks | | | | | | | | | | | |
| Overcup oak | 11,598 | 55 | - - | 285 | 1,148 | - - | 919 | - - | - - | 1,723 | 7,468 |
| Chestnut oak | 793 | 153 | - - | - - | - - | 640 | - - | - - | - - | - - | - - |
| Post oak | 1,408,101 | 147,005 | 242,415 | 267,580 | 233,950 | 202,653 | 151,712 | 74,708 | 41,500 | 28,167 | 18,410 |
| All species | 1,420,492 | 147,213 | 242,415 | 267,866 | 235,097 | 203,294 | 152,631 | 74,708 | 41,500 | 29,890 | 25,878 |

(Table 7a continued on next page)

(Table 7a continued)

| Species group/ species | All classes | Diameter class (inches at breast height) 5.0-6.9 | 7.0-8.9 | 9.0-10.9 | 11.0-12.9 | 13.0-14.9 | 15.0-16.9 | 17.0-18.9 | 19.0-20.9 | 21.0-28.9 | 29.0+ |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Hardwoods** | | | | | | | | | | | |
| Other red oaks | | | | | | | | | | | |
| Scarlet oak | 515,105 | 31,249 | 56,020 | 76,029 | 87,532 | 79,512 | 79,221 | 51,142 | 31,520 | 22,880 | - - |
| Northern pin oak | 2,179 | 518 | 763 | 898 | - - | - - | - - | - - | - - | - - | - - |
| Southern red oak | 55,028 | 4,566 | 5,797 | 5,372 | 6,861 | 9,391 | 1,653 | 1,412 | 3,951 | 11,573 | 4,452 |
| Shingle oak | 165,481 | 15,726 | 20,004 | 24,239 | 19,617 | 11,728 | 22,469 | 14,015 | 14,433 | 16,476 | 6,773 |
| Blackjack oak | 146,050 | 21,483 | 21,765 | 21,590 | 23,683 | 20,854 | 16,024 | 6,490 | - - | 6,606 | 7,553 |
| Pin oak | 164,160 | 6,494 | 8,055 | 21,996 | 20,993 | 25,878 | 15,624 | 15,194 | 10,312 | 36,040 | 3,574 |
| Willow oak | 5,568 | 314 | 239 | 654 | 547 | 1,255 | - - | - - | - - | 2,559 | - - |
| Black oak | 2,377,679 | 131,920 | 219,980 | 321,584 | 415,188 | 413,456 | 321,686 | 222,667 | 150,443 | 170,625 | 10,130 |
| All species | 3,431,249 | 212,270 | 332,624 | 472,363 | 574,420 | 562,074 | 456,677 | 310,921 | 210,659 | 266,758 | 32,482 |
| Hickory | | | | | | | | | | | |
| Bitternut hickory | 166,225 | 20,705 | 26,024 | 23,663 | 29,651 | 21,335 | 18,855 | 10,785 | 11,638 | 3,569 | - - |
| Pignut hickory | 142,240 | 16,785 | 23,221 | 23,379 | 25,101 | 17,282 | 15,912 | 8,851 | 1,591 | 10,117 | - - |
| Pecan | 23,638 | 1,089 | 1,372 | 3,753 | 4,762 | 5,419 | 3,164 | 1,520 | 2,559 | - - | - - |
| Shellbark hickory | 36,397 | 2,697 | 4,400 | 5,661 | 5,036 | 1,572 | 1,036 | 4,022 | 2,958 | 9,015 | - - |
| Shagbark hickory | 399,931 | 48,837 | 64,252 | 69,532 | 66,461 | 46,409 | 39,195 | 29,755 | 7,732 | 27,758 | - - |
| Black hickory | 352,309 | 53,787 | 67,196 | 61,354 | 65,398 | 43,947 | 31,989 | 12,951 | 13,657 | 2,029 | - - |
| Mockernut hickory | 273,272 | 40,012 | 51,084 | 55,902 | 49,354 | 30,360 | 20,825 | 16,742 | 5,232 | 3,762 | - - |
| All species | 1,394,012 | 183,913 | 237,549 | 243,245 | 245,762 | 166,323 | 130,974 | 84,627 | 45,367 | 56,251 | - - |
| Hard maple | | | | | | | | | | | |
| Black maple | 3,380 | 168 | 120 | 666 | - - | - - | - - | - - | 2,426 | - - | - - |
| Sugar maple | 183,341 | 30,449 | 28,421 | 34,584 | 26,840 | 17,157 | 11,638 | 15,545 | 12,075 | 6,632 | - - |
| All species | 186,721 | 30,617 | 28,542 | 35,250 | 26,840 | 17,157 | 11,638 | 15,545 | 14,501 | 6,632 | - - |
| Soft maple | | | | | | | | | | | |
| Red maple | 39,208 | 6,151 | 5,866 | 5,742 | 2,458 | 1,806 | 2,982 | 3,549 | 3,043 | 7,611 | - - |
| Silver maple | 184,030 | 7,091 | 11,011 | 12,719 | 15,137 | 15,546 | 34,413 | 11,786 | 21,769 | 49,377 | 5,181 |
| All species | 223,238 | 13,242 | 16,877 | 18,461 | 17,595 | 17,352 | 37,394 | 15,335 | 24,812 | 56,988 | 5,181 |
| Beech | | | | | | | | | | | |
| American beech | 829 | - - | 138 | 230 | - - | 460 | - - | - - | - - | - - | - - |
| All species | 829 | - - | 138 | 230 | - - | 460 | - - | - - | - - | - - | - - |
| Sweetgum | | | | | | | | | | | |
| Sweetgum | 24,604 | 1,128 | 3,026 | 3,035 | 3,169 | 2,421 | 4,323 | 6,021 | 1,481 | - - | - - |
| All species | 24,604 | 1,128 | 3,026 | 3,035 | 3,169 | 2,421 | 4,323 | 6,021 | 1,481 | - - | - - |
| Tupelo and blackgum | | | | | | | | | | | |
| Water tupelo | 11,698 | 130 | 178 | - - | 875 | 1,875 | 5,670 | 1,260 | 1,711 | - - | - - |
| Blackgum | 63,670 | 12,904 | 11,355 | 12,026 | 8,635 | 8,675 | 3,299 | 1,713 | 3,176 | 1,887 | - - |
| Swamp tupelo | 413 | 72 | - - | - - | 341 | - - | - - | - - | - - | - - | - - |
| All species | 75,780 | 13,105 | 11,533 | 12,026 | 9,851 | 10,549 | 8,970 | 2,973 | 4,886 | 1,887 | - - |
| Ash | | | | | | | | | | | |
| White ash | 155,755 | 15,934 | 18,912 | 24,916 | 20,761 | 20,886 | 20,848 | 11,300 | 11,637 | 10,561 | - - |
| Green ash | 128,160 | 9,626 | 18,203 | 18,329 | 23,537 | 16,155 | 23,575 | 7,063 | 5,450 | 6,220 | - - |
| Blue ash | 2,508 | 431 | 408 | 752 | 435 | 482 | - - | - - | - - | - - | - - |
| All species | 286,423 | 25,991 | 37,523 | 43,998 | 44,733 | 37,523 | 44,423 | 18,363 | 17,087 | 16,781 | - - |

(Table 7a continued on next page)

(Table 7a continued)

| Species group/ species | All classes | Diameter class (inches at breast height) | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | 5.0-6.9 | 7.0-8.9 | 9.0-10.9 | 11.0-12.9 | 13.0-14.9 | 15.0-16.9 | 17.0-18.9 | 19.0-20.9 | 21.0-28.9 | 29.0+ |
| **Hardwoods** | | | | | | | | | | | |
| Cottonwood and aspen | | | | | | | | | | | |
| Eastern cottonwood | 136,764 | 1,211 | 502 | 1,183 | 6,096 | 696 | 9,818 | 16,800 | 17,240 | 16,308 | 66,911 |
| All species | 136,764 | 1,211 | 502 | 1,183 | 6,096 | 696 | 9,818 | 16,800 | 17,240 | 16,308 | 66,911 |
| Basswood | | | | | | | | | | | |
| American basswood | 31,041 | 907 | 2,413 | 3,555 | 4,088 | 2,132 | 2,948 | 1,982 | 2,558 | 10,458 | - - |
| All species | 31,041 | 907 | 2,413 | 3,555 | 4,088 | 2,132 | 2,948 | 1,982 | 2,558 | 10,458 | - - |
| Yellow-poplar | | | | | | | | | | | |
| Yellow-poplar | 16,983 | 362 | 453 | 983 | 2,176 | 4,550 | 3,623 | 1,293 | 3,543 | - - | - - |
| All species | 16,983 | 362 | 453 | 983 | 2,176 | 4,550 | 3,623 | 1,293 | 3,543 | - - | - - |
| Black walnut | | | | | | | | | | | |
| Black walnut | 358,388 | 17,574 | 33,743 | 45,281 | 68,811 | 52,833 | 40,128 | 40,760 | 27,861 | 31,397 | - - |
| All species | 358,388 | 17,574 | 33,743 | 45,281 | 68,811 | 52,833 | 40,128 | 40,760 | 27,861 | 31,397 | - - |
| Other eastern soft hardwoods | | | | | | | | | | | |
| Boxelder | 23,288 | 3,252 | 3,370 | 4,768 | 2,332 | 3,558 | 2,662 | 3,346 | - - | - - | - - |
| Ohio buckeye | 4,239 | 984 | 996 | 199 | 1,526 | 534 | - - | - - | - - | - - | - - |
| River birch | 27,913 | 1,386 | 2,658 | 3,142 | 5,078 | 8,409 | 1,470 | 3,679 | 2,090 | - - | - - |
| Sugarberry | 3,551 | 667 | 699 | 578 | 1,607 | - - | - - | - - | - - | - - | - - |
| Hackberry | 228,673 | 20,226 | 27,335 | 32,441 | 34,926 | 35,665 | 21,775 | 19,318 | 15,070 | 21,917 | - - |
| Butternut | 3,284 | 183 | 293 | - - | 1,868 | 940 | - - | - - | - - | - - | - - |
| Sycamore | 240,720 | 5,111 | 10,725 | 10,670 | 27,880 | 32,323 | 23,786 | 37,927 | 27,518 | 48,812 | 15,969 |
| Black cherry | 64,288 | 11,815 | 13,092 | 10,859 | 10,747 | 11,018 | 5,705 | 1,053 | - - | - - | - - |
| Black willow | 28,721 | 1,524 | 1,438 | 2,796 | 2,099 | 1,356 | 7,610 | 9,966 | - - | 1,932 | - - |
| Sassafras | 19,605 | 6,308 | 4,157 | 2,573 | 2,089 | 2,361 | - - | 2,117 | - - | - - | - - |
| Winged elm | 17,491 | 7,361 | 5,820 | 2,010 | 661 | 751 | 890 | - - | - - | - - | - - |
| American elm | 219,403 | 45,423 | 46,841 | 42,177 | 29,896 | 15,251 | 18,450 | 8,216 | 11,361 | 1,788 | - - |
| Slippery elm | 88,323 | 21,611 | 16,738 | 16,104 | 13,588 | 5,756 | 7,613 | 4,373 | 2,539 | - - | - - |
| All species | 969,499 | 125,851 | 134,160 | 128,317 | 134,296 | 117,923 | 89,960 | 89,996 | 58,578 | 74,449 | 15,969 |
| Other eastern hard hardwoods | | | | | | | | | | | |
| Flowering dogwood | 2,650 | 2,402 | 248 | - - | - - | - - | - - | - - | - - | - - | - - |
| Common persimmon | 20,705 | 8,296 | 6,854 | 3,799 | 1,756 | - - | - - | - - | - - | - - | - - |
| Honeylocust | 129,169 | 10,559 | 15,309 | 17,486 | 16,994 | 21,191 | 5,312 | 13,587 | 20,241 | 2,078 | 6,412 |
| Kentucky coffeetree | 7,210 | 606 | 841 | 2,286 | 861 | 2,616 | - - | - - | - - | - - | - - |
| White mulberry | 2,866 | 197 | 432 | 263 | - - | 547 | - - | - - | 1,428 | - - | - - |
| Red mulberry | 18,311 | 3,132 | 4,421 | 2,739 | 3,247 | 1,140 | 765 | 2,867 | - - | - - | - - |
| Black locust | 31,885 | 3,025 | 5,948 | 7,311 | 4,704 | 5,076 | 4,581 | 1,240 | - - | - - | - - |
| All species | 212,795 | 28,216 | 34,053 | 33,883 | 27,562 | 30,569 | 10,659 | 17,694 | 21,668 | 2,078 | 6,412 |
| Total hardwoods | 13,026,171 | 1,067,415 | 1,524,836 | 1,857,218 | 2,035,608 | 1,876,384 | 1,571,910 | 1,119,848 | 797,969 | 956,666 | 218,315 |
| **All species groups** | 14,201,320 | 1,249,783 | 1,746,046 | 2,098,790 | 2,247,991 | 2,036,455 | 1,657,058 | 1,155,739 | 828,030 | 963,112 | 218,315 |

All table cells without observations in the inventory sample are indicated by --. Table value of 0.0 indicates the acres round to less than 0.1 thousand acres. Columns and rows may not add to thier total due to rounding.

Table 8. -- Net volume of sawtimber on timberland by species group and diameter class, Missouri, 1999 - 2002

(In thousand board feet)[1]

| Species group | All classes | Diameter class (inches at breast height) | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | 9.0-10.9 | 11.0-12.9 | 13.0-14.9 | 15.0-16.9 | 17.0-18.9 | 19.0-20.9 | 21.0-28.9 | 29.0+ |
| **Softwoods** | | | | | | | | | |
| Loblolly and shortleaf pines | 3,113,954 | 795,547 | 873,460 | 668,007 | 411,164 | 189,665 | 152,073 | 24,039 | - - |
| Other yellow pines | 2,135 | 2,135 | - - | - - | - - | - - | - - | - - | - - |
| Eastern white and red pines | 25,098 | 2,658 | 7,746 | 14,693 | - - | - - | - - | - - | - - |
| Cypress | 1,631 | - - | 1,631 | - - | - - | - - | - - | - - | - - |
| Other eastern softwoods | 857,655 | 450,178 | 206,491 | 143,213 | 36,607 | 3,807 | 9,035 | 8,323 | - - |
| Total softwoods | 4,000,474 | 1,250,518 | 1,089,329 | 825,913 | 447,771 | 193,472 | 161,108 | 32,363 | - - |
| **Hardwoods** | | | | | | | | | |
| Select white oaks | 10,885,522 | - - | 2,634,584 | 2,534,388 | 2,102,327 | 1,451,263 | 884,059 | 1,097,726 | 181,174 |
| Select red oaks | 3,525,291 | - - | 475,590 | 614,541 | 614,078 | 544,703 | 551,882 | 644,824 | 79,673 |
| Other white oaks | 3,665,547 | - - | 1,143,681 | 983,545 | 737,490 | 356,903 | 195,987 | 138,907 | 109,033 |
| Other red oaks | 11,869,599 | - - | 2,851,166 | 2,798,229 | 2,269,245 | 1,532,972 | 1,027,193 | 1,258,465 | 132,330 |
| Hickory | 3,575,279 | - - | 1,202,646 | 815,787 | 643,670 | 415,092 | 223,195 | 274,890 | - - |
| Hard maple | 435,179 | - - | 127,307 | 81,467 | 55,317 | 73,031 | 67,865 | 30,192 | - - |
| Soft maple | 754,571 | - - | 76,317 | 75,953 | 164,171 | 67,255 | 108,347 | 242,697 | 19,831 |
| Beech | 2,324 | - - | - - | 2,324 | - - | - - | - - | - - | - - |
| Sweetgum | 78,845 | - - | 14,436 | 11,100 | 19,676 | 27,019 | 6,614 | - - | - - |
| Tupelo and blackgum | 178,757 | - - | 45,651 | 48,524 | 40,955 | 13,495 | 21,818 | 8,314 | - - |
| Ash | 833,404 | - - | 202,592 | 173,705 | 209,080 | 87,339 | 81,524 | 79,164 | - - |
| Cottonwood and aspen | 636,373 | - - | 28,709 | 3,478 | 48,730 | 84,312 | 87,587 | 84,227 | 299,331 |
| Basswood | 119,154 | - - | 20,679 | 10,739 | 14,747 | 9,848 | 12,567 | 50,575 | - - |
| Yellow-poplar | 77,333 | - - | 10,648 | 22,782 | 18,937 | 6,601 | 18,366 | - - | - - |
| Black walnut | 1,225,993 | - - | 328,858 | 251,887 | 190,054 | 191,800 | 129,204 | 134,190 | - - |
| Other eastern soft hardwoods | 2,635,543 | - - | 616,682 | 538,385 | 407,924 | 406,594 | 263,370 | 330,823 | 71,765 |
| Other eastern hard hardwoods | 529,648 | - - | 127,116 | 141,086 | 48,820 | 80,453 | 97,342 | 9,148 | 25,684 |
| Total hardwoods | 41,028,363 | - - | 9,906,663 | 9,107,918 | 7,585,221 | 5,348,678 | 3,776,920 | 4,384,141 | 918,822 |
| **All species** | 45,028,837 | 1,250,518 | 10,995,992 | 9,933,831 | 8,032,992 | 5,542,150 | 3,938,028 | 4,416,504 | 918,822 |

All table cells without observations in the inventory sample are indicated by --. Table value of 0 indicates that the volume rounds to less than 1 thousand board feet. Columns and rows may not add to their totals due to rounding.

[1]International 1/4-inch rule.

Table 8a. -- Net volume of sawtimber on timberland by species group, species and diameter class, Missouri, 1999 - 2002

(In thousand board feet)[1]

| Species group/ species | All classes | Diameter class (inches at breast height) | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | 9.0-10.9 | 11.0-12.9 | 13.0-14.9 | 15.0-16.9 | 17.0-18.9 | 19.0-20.9 | 21.0-28.9 | 29.0+ |
| **Softwoods** | | | | | | | | | |
| Loblolly and shortleaf pines | | | | | | | | | |
| Shortleaf pine | 3,113,954 | 795,547 | 873,460 | 668,007 | 411,164 | 189,665 | 152,073 | 24,039 | - - |
| All species | 3,113,954 | 795,547 | 873,460 | 668,007 | 411,164 | 189,665 | 152,073 | 24,039 | - - |
| Other yellow pines | | | | | | | | | |
| Scotch pine | 2,135 | 2,135 | - - | - - | - - | - - | - - | - - | - - |
| All species | 2,135 | 2,135 | - - | - - | - - | - - | - - | - - | - - |
| Eastern white and red pines | | | | | | | | | |
| Eastern white pine | 25,098 | 2,658 | 7,746 | 14,693 | - - | - - | - - | - - | - - |
| All species | 25,098 | 2,658 | 7,746 | 14,693 | - - | - - | - - | - - | - - |
| Cypress | | | | | | | | | |
| Baldcypress | 1,631 | - - | 1,631 | - - | - - | - - | - - | - - | - - |
| All species | 1,631 | - - | 1,631 | - - | - - | - - | - - | - - | - - |
| Other eastern softwoods | | | | | | | | | |
| Eastern redcedar | 857,655 | 450,178 | 206,491 | 143,213 | 36,607 | 3,807 | 9,035 | 8,323 | - - |
| All species | 857,655 | 450,178 | 206,491 | 143,213 | 36,607 | 3,807 | 9,035 | 8,323 | - - |
| Total softwoods | 4,000,474 | 1,250,518 | 1,089,329 | 825,913 | 447,771 | 193,472 | 161,108 | 32,363 | - - |
| **Hardwoods** | | | | | | | | | |
| Select white oaks | | | | | | | | | |
| White oak | 9,925,779 | - - | 2,436,809 | 2,369,794 | 1,892,118 | 1,352,222 | 839,981 | 901,477 | 133,378 |
| Swamp white oak | 177,774 | - - | 32,275 | 21,547 | 59,259 | 22,202 | 17,753 | 24,739 | - - |
| Bur oak | 228,620 | - - | 36,843 | 29,226 | 39,825 | 8,280 | - - | 83,944 | 30,500 |
| Swamp chestnut oak | 37,583 | - - | 1,436 | - - | - - | - - | 10,750 | 8,101 | 17,296 |
| Chinkapin oak | 515,766 | - - | 127,221 | 113,821 | 111,125 | 68,559 | 15,576 | 79,465 | - - |
| All species | 10,885,522 | - - | 2,634,584 | 2,534,388 | 2,102,327 | 1,451,263 | 884,059 | 1,097,726 | 181,174 |
| Select red oaks | | | | | | | | | |
| Cherrybark oak | 29,996 | - - | 4,501 | - - | 19,148 | 6,347 | - - | - - | - - |
| Northern red oak | 3,284,639 | - - | 441,683 | 558,669 | 564,247 | 522,009 | 543,042 | 575,316 | 79,673 |
| Shumard oak | 210,657 | - - | 29,406 | 55,871 | 30,683 | 16,348 | 8,840 | 69,508 | - - |
| All species | 3,525,291 | - - | 475,590 | 614,541 | 614,078 | 544,703 | 551,882 | 644,824 | 79,673 |
| Other white oaks | | | | | | | | | |
| Overcup oak | 54,216 | - - | 5,965 | - - | 4,849 | - - | - - | 8,739 | 34,663 |
| Chestnut oak | 3,257 | - - | - - | 3,257 | - - | - - | - - | - - | - - |
| Post oak | 3,608,074 | - - | 1,137,716 | 980,288 | 732,641 | 356,903 | 195,987 | 130,168 | 74,370 |
| All species | 3,665,547 | - - | 1,143,681 | 983,545 | 737,490 | 356,903 | 195,987 | 138,907 | 109,033 |

(Table 8a continued on next page)

(Table 8a continued)

| Species group/ species | All classes | Diameter class (inches at breast height) 9.0-10.9 | 11.0-12.9 | 13.0-14.9 | 15.0-16.9 | 17.0-18.9 | 19.0-20.9 | 21.0-28.9 | 29.0+ |
|---|---|---|---|---|---|---|---|---|---|
| **Hardwoods** | | | | | | | | | |
| Other red oaks | | | | | | | | | |
| Scarlet oak | 1,735,861 | - - | 433,951 | 395,284 | 392,981 | 251,814 | 153,688 | 108,143 | - - |
| Northern pin oak | - - | - - | - - | - - | - - | - - | - - | - - | - - |
| Southern red oak | 185,151 | - - | 33,924 | 46,663 | 8,158 | 6,860 | 19,203 | 52,104 | 18,239 |
| Shingle oak | 513,553 | - - | 97,248 | 58,280 | 111,642 | 69,146 | 70,177 | 77,999 | 29,062 |
| Blackjack oak | 390,103 | - - | 117,997 | 104,094 | 79,746 | 32,103 | - - | 30,980 | 25,183 |
| Pin oak | 616,439 | - - | 103,441 | 128,163 | 77,161 | 74,507 | 50,022 | 167,468 | 15,676 |
| Willow oak | 20,752 | - - | 2,670 | 6,181 | - - | - - | - - | 11,901 | - - |
| Black oak | 8,407,740 | - - | 2,061,934 | 2,059,563 | 1,599,557 | 1,098,542 | 734,103 | 809,870 | 44,171 |
| All species | 11,869,599 | - - | 2,851,166 | 2,798,229 | 2,269,245 | 1,532,972 | 1,027,193 | 1,258,465 | 132,330 |
| Hickory | | | | | | | | | |
| Bitternut hickory | 476,153 | - - | 147,146 | 105,982 | 93,624 | 53,858 | 57,824 | 17,719 | - - |
| Pignut hickory | 391,123 | - - | 124,240 | 85,744 | 79,167 | 44,052 | 7,920 | 50,000 | - - |
| Pecan | 84,239 | - - | 22,943 | 26,190 | 15,337 | 7,346 | 12,423 | - - | - - |
| Shellbark hickory | 114,613 | - - | 24,343 | 7,626 | 5,010 | 19,445 | 14,368 | 43,822 | - - |
| Shagbark hickory | 1,054,751 | - - | 321,772 | 225,166 | 190,546 | 144,519 | 37,696 | 135,052 | - - |
| Black hickory | 842,562 | - - | 323,639 | 217,905 | 158,939 | 64,443 | 67,657 | 9,978 | - - |
| Mockernut hickory | 611,838 | - - | 238,563 | 147,174 | 101,047 | 81,428 | 25,307 | 18,319 | - - |
| All species | 3,575,279 | - - | 1,202,646 | 815,787 | 643,670 | 415,092 | 223,195 | 274,890 | - - |
| Hard maple | | | | | | | | | |
| Black maple | 11,369 | - - | - - | - - | - - | - - | 11,369 | - - | - - |
| Sugar maple | 423,810 | - - | 127,307 | 81,467 | 55,317 | 73,031 | 56,496 | 30,192 | - - |
| All species | 435,179 | - - | 127,307 | 81,467 | 55,317 | 73,031 | 67,865 | 30,192 | - - |
| Soft maple | | | | | | | | | |
| Red maple | 93,031 | - - | 10,658 | 7,890 | 13,125 | 15,542 | 13,326 | 32,491 | - - |
| Silver maple | 661,540 | - - | 65,659 | 68,063 | 151,046 | 51,713 | 95,022 | 210,205 | 19,831 |
| All species | 754,571 | - - | 76,317 | 75,953 | 164,171 | 67,255 | 108,347 | 242,697 | 19,831 |
| Beech | | | | | | | | | |
| American beech | 2,324 | - - | - - | 2,324 | - - | - - | - - | - - | - - |
| All species | 2,324 | - - | - - | 2,324 | - - | - - | - - | - - | - - |
| Sweetgum | | | | | | | | | |
| Sweetgum | 78,845 | - - | 14,436 | 11,100 | 19,676 | 27,019 | 6,614 | - - | - - |
| All species | 78,845 | - - | 14,436 | 11,100 | 19,676 | 27,019 | 6,614 | - - | - - |
| Tupelo and blackgum | | | | | | | | | |
| Water tupelo | 51,431 | - - | 3,993 | 8,546 | 25,672 | 5,655 | 7,564 | - - | - - |
| Blackgum | 125,732 | - - | 40,063 | 39,978 | 15,283 | 7,840 | 14,254 | 8,314 | - - |
| Swamp tupelo | 1,595 | - - | 1,595 | - - | - - | - - | - - | - - | - - |
| All species | 178,757 | - - | 45,651 | 48,524 | 40,955 | 13,495 | 21,818 | 8,314 | - - |
| Ash | | | | | | | | | |
| White ash | 447,620 | - - | 93,996 | 96,723 | 98,101 | 53,750 | 55,516 | 49,535 | - - |
| Green ash | 381,581 | - - | 106,608 | 74,767 | 110,980 | 33,589 | 26,008 | 29,629 | - - |
| Blue ash | 4,203 | - - | 1,988 | 2,215 | - - | - - | - - | - - | - - |
| All species | 833,404 | - - | 202,592 | 173,705 | 209,080 | 87,339 | 81,524 | 79,164 | - - |

(Table 8a continued on next page)

(Table 8a continued)

| Species group/ species | All classes | Diameter class (inches at breast height) 9.0-10.9 | 11.0-12.9 | 13.0-14.9 | 15.0-16.9 | 17.0-18.9 | 19.0-20.9 | 21.0-28.9 | 29.0+ |
|---|---|---|---|---|---|---|---|---|---|
| **Hardwoods** | | | | | | | | | |
| Cottonwood and aspen | | | | | | | | | |
| Eastern cottonwood | 636,373 | -- | 28,709 | 3,478 | 48,730 | 84,312 | 87,587 | 84,227 | 299,331 |
| All species | 636,373 | -- | 28,709 | 3,478 | 48,730 | 84,312 | 87,587 | 84,227 | 299,331 |
| Basswood | | | | | | | | | |
| American basswood | 119,154 | -- | 20,679 | 10,739 | 14,747 | 9,848 | 12,567 | 50,575 | -- |
| All species | 119,154 | -- | 20,679 | 10,739 | 14,747 | 9,848 | 12,567 | 50,575 | -- |
| Yellow-poplar | | | | | | | | | |
| Yellow-poplar | 77,333 | -- | 10,648 | 22,782 | 18,937 | 6,601 | 18,366 | -- | -- |
| All species | 77,333 | -- | 10,648 | 22,782 | 18,937 | 6,601 | 18,366 | -- | -- |
| Black walnut | | | | | | | | | |
| Black walnut | 1,225,993 | -- | 328,858 | 251,887 | 190,054 | 191,800 | 129,204 | 134,190 | -- |
| All species | 1,225,993 | -- | 328,858 | 251,887 | 190,054 | 191,800 | 129,204 | 134,190 | -- |
| Other eastern soft hardwoods | | | | | | | | | |
| Boxelder | 54,253 | -- | 10,709 | 16,316 | 12,054 | 15,175 | -- | -- | -- |
| Ohio buckeye | 9,436 | -- | 6,963 | 2,473 | -- | -- | -- | -- | -- |
| River birch | 95,110 | -- | 23,370 | 38,631 | 6,698 | 16,742 | 9,668 | -- | -- |
| Sugarberry | 7,532 | -- | 7,532 | -- | -- | -- | -- | -- | -- |
| Hackberry | 660,310 | -- | 161,826 | 161,930 | 97,802 | 85,073 | 64,971 | 88,709 | -- |
| Butternut | 12,939 | -- | 8,582 | 4,357 | -- | -- | -- | -- | -- |
| Sycamore | 985,547 | -- | 124,612 | 147,795 | 110,330 | 175,578 | 129,498 | 225,969 | 71,765 |
| Black cherry | 131,716 | -- | 49,584 | 50,986 | 26,351 | 4,796 | -- | -- | -- |
| Black willow | 102,278 | -- | 9,139 | 5,925 | 33,964 | 44,800 | -- | 8,450 | -- |
| Sassafras | 30,277 | -- | 9,690 | 10,930 | -- | 9,658 | -- | -- | -- |
| Winged elm | 10,088 | -- | 3,102 | 3,128 | 3,858 | -- | -- | -- | -- |
| American elm | 383,311 | -- | 138,553 | 69,700 | 83,213 | 35,641 | 48,508 | 7,696 | -- |
| Slippery elm | 152,747 | -- | 63,022 | 26,215 | 33,654 | 19,132 | 10,725 | -- | -- |
| All species | 2,635,543 | -- | 616,682 | 538,385 | 407,924 | 406,594 | 263,370 | 330,823 | 71,765 |
| Other eastern hard hardwoods | | | | | | | | | |
| Flowering dogwood | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| Common persimmon | 8,116 | -- | 8,116 | -- | -- | -- | -- | -- | -- |
| Honeylocust | 388,214 | -- | 78,482 | 97,839 | 24,288 | 61,846 | 90,927 | 9,148 | 25,684 |
| Kentucky coffeetree | 16,026 | -- | 3,969 | 12,057 | -- | -- | -- | -- | -- |
| White mulberry | 8,940 | -- | -- | 2,525 | -- | -- | 6,415 | -- | -- |
| Red mulberry | 36,787 | -- | 14,916 | 5,299 | 3,497 | 13,075 | -- | -- | -- |
| Black locust | 71,565 | -- | 21,633 | 23,366 | 21,034 | 5,532 | -- | -- | -- |
| All species | 529,648 | -- | 127,116 | 141,086 | 48,820 | 80,453 | 97,342 | 9,148 | 25,684 |
| Total hardwoods | 41,028,363 | -- | 9,906,663 | 9,107,918 | 7,585,221 | 5,348,678 | 3,776,920 | 4,384,141 | 918,822 |
| **All species groups** | 45,028,837 | 1,250,518 | 10,995,992 | 9,933,831 | 8,032,992 | 5,542,150 | 3,938,028 | 4,416,504 | 918,822 |

All table cells without observations in the inventory sample are indicated by --. Table value of 0.0 indicates the acres round to less than 0.1 thousand acres. Columns and rows may not add to thier total due to rounding.

[1] International 1/4-inch rule.

Table 9. -- All live aboveground tree biomass on timberland by owner category, softwood/hardwood species category, and tree biomass component, Missouri, 1999 - 2002

(In dry tons)

| Owner category and softwood/hardwood category | All components | Tree biomass component | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | | All live 1-5 inch trees | Growing-stock trees | | | Non-growing-stock trees | | |
| | | | Total | Boles | Stumps, tops, and limbs | Total | Boles | Stumps, tops, and limbs |
| **Public** | | | | | | | | |
| Softwoods | 10,147,758 | 606,653 | 9,310,133 | 7,748,337 | 1,561,796 | 230,971 | 175,202 | 55,769 |
| Hardwoods | 87,626,491 | 9,376,382 | 65,572,283 | 46,944,165 | 18,628,118 | 12,677,825 | 9,208,974 | 3,468,852 |
| Total | 97,774,248 | 9,983,035 | 74,882,416 | 54,692,502 | 20,189,915 | 12,908,797 | 9,384,176 | 3,524,621 |
| **Private** | | | | | | | | |
| Softwoods | 19,945,642 | 3,627,284 | 14,152,233 | 10,750,340 | 3,401,893 | 2,166,125 | 1,551,533 | 614,592 |
| Hardwoods | 432,109,366 | 35,176,258 | 308,901,185 | 220,545,462 | 88,355,723 | 88,031,924 | 64,000,264 | 24,031,660 |
| Total | 452,055,008 | 38,803,541 | 323,053,418 | 231,295,802 | 91,757,616 | 90,198,049 | 65,551,797 | 24,646,252 |
| **All ownerships** | | | | | | | | |
| Softwoods | 30,093,400 | 4,233,937 | 23,462,366 | 18,498,677 | 4,963,689 | 2,397,096 | 1,726,735 | 670,361 |
| Hardwoods | 519,735,857 | 44,552,640 | 374,473,468 | 267,489,627 | 106,983,841 | 100,709,749 | 73,209,238 | 27,500,511 |
| Total | 549,829,257 | 48,786,577 | 397,935,834 | 285,988,304 | 111,947,530 | 103,106,846 | 74,935,973 | 28,170,873 |

All table cells without observations in the inventory sample are indicated by --. Table value of 0 indicates the aboveground tree biomass rounds to less than 1 dry ton. Columns and rows may not add to their totals due to rounding.

Table 10. -- Average annual net growth of growing-stock on timberland by species group and owner category, Missouri, 1989 to 1999 - 2002

(In thousand cubic feet per year)

| Species group | Owner category | | | |
|---|---|---|---|---|
| | All owners | Public | Private | Unidentified owner |
| **Softwoods** | | | | |
| Loblolly and shortleaf pines | 17,843 | 9,490 | 8,353 | - - |
| Other yellow pines | - - | - - | - - | - - |
| Eastern white and red pines | 585 | 585 | - - | - - |
| Other eastern softwoods | 22,773 | 2,477 | 20,296 | - - |
| Total softwoods | 41,201 | 12,552 | 28,649 | - - |
| **Hardwoods** | | | | |
| Select white oaks | 136,504 | 21,328 | 115,175 | - - |
| Select red oaks | 29,115 | 4,672 | 24,444 | - - |
| Other white oaks | 62,987 | 6,963 | 56,023 | - - |
| Other red oaks | 154,553 | 21,282 | 133,271 | - - |
| Hickory | 54,841 | 4,969 | 49,872 | - - |
| Hard maple | 11,672 | 554 | 11,118 | - - |
| Soft maple | 9,581 | 1,283 | 8,298 | - - |
| Beech | - - | - - | - - | - - |
| Sweetgum | 1,196 | 206 | 990 | - - |
| Tupelo and blackgum | 2,802 | 633 | 2,169 | - - |
| Ash | 12,838 | 914 | 11,924 | - - |
| Cottonwood and aspen | 7,082 | 1,292 | 5,790 | - - |
| Basswood | 2,244 | 36 | 2,208 | - - |
| Yellow-poplar | -34 | - - | -34 | - - |
| Black walnut | 16,851 | 561 | 16,289 | - - |
| Other eastern soft hardwoods | 43,214 | 1,834 | 41,381 | - - |
| Other eastern hard hardwoods | 15,841 | 435 | 15,406 | - - |
| Eastern noncommercial hardwoods | - - | - - | - - | - - |
| Total hardwoods | 561,287 | 66,962 | 494,325 | - - |
| **All species groups** | 602,489 | 79,515 | 522,974 | - - |

All table cells without observations in the inventory sample are indicated by --. Table value of 0 indicates that the volume rounds to less than 1 thousand cubic feet. Columns and rows may not add to their totals due to rounding.

Table 11. -- Average annual removals of growing-stock on timberland by species group and owner category, Missouri, 1989 to 1999 - 2002

(In thousand cubic feet per year)

| Species group | Owner category | | | |
|---|---|---|---|---|
| | All owners | Public | Private | Unidentified owner |
| **Softwoods** | | | | |
| Loblolly and shortleaf pines | 8,435 | 2,726 | 5,709 | - - |
| Other eastern softwoods | 2,920 | - - | 2,920 | - - |
| Total softwoods | 11,355 | 2,726 | 8,629 | - - |
| **Hardwoods** | | | | |
| Select white oaks | 32,929 | 2,999 | 29,930 | - - |
| Select red oaks | 5,388 | 995 | 4,394 | - - |
| Other white oaks | 9,360 | 559 | 8,802 | - - |
| Other red oaks | 41,549 | 7,743 | 33,806 | - - |
| Hickory | 5,867 | 469 | 5,397 | - - |
| Hard maple | 426 | - - | 426 | - - |
| Soft maple | 1,312 | - - | 1,312 | - - |
| Tupelo and blackgum | - - | - - | - - | - - |
| Ash | 1,745 | - - | 1,745 | - - |
| Cottonwood and aspen | 2,043 | 247 | 1,797 | - - |
| Basswood | 465 | - - | 465 | - - |
| Yellow-poplar | 466 | - - | 466 | - - |
| Black walnut | 842 | - - | 842 | - - |
| Other eastern soft hardwoods | 8,294 | 107 | 8,187 | - - |
| Other eastern hard hardwoods | 306 | - - | 306 | - - |
| Eastern noncommercial hardwoods | - - | - - | - - | - - |
| Total hardwoods | 110,993 | 13,118 | 97,875 | - - |
| **All species groups** | 122,348 | 15,844 | 106,504 | - - |

All table cells without observations in the inventory sample are indicated by --. Table value of 0 indicates that the volume rounds to less than 1 thousand cubic feet. Columns and rows may not add to their totals due to rounding.

Table 12. -- Average annual mortality of growing-stock on timberland by species group and owner category, Missouri, 1989 to 1999 - 2002

(In thousand cubic feet per year)

| Species group | Owner category | | | |
|---|---|---|---|---|
| | All owners | Public | Private | Unidentified owner |
| **Softwoods** | | | | |
| Loblolly and shortleaf pines | 2,690 | 1,165 | 1,525 | - - |
| Other yellow pines | - - | - - | - - | - - |
| Eastern white and red pines | 109 | 109 | - - | - - |
| Other eastern softwoods | 1,354 | 442 | 912 | - - |
| Total softwoods | 4,153 | 1,716 | 2,437 | - - |
| **Hardwoods** | | | | |
| Select white oaks | 8,384 | 1,116 | 7,268 | - - |
| Select red oaks | 5,203 | 1,302 | 3,900 | - - |
| Other white oaks | 5,267 | 444 | 4,823 | - - |
| Other red oaks | 24,614 | 5,651 | 18,963 | - - |
| Hickory | 7,562 | 1,239 | 6,322 | - - |
| Hard maple | 412 | 153 | 259 | - - |
| Soft maple | 1,659 | - - | 1,659 | - - |
| Sweetgum | - - | - - | - - | - - |
| Tupelo and blackgum | 139 | 139 | - - | - - |
| Ash | 1,527 | - - | 1,527 | - - |
| Cottonwood and aspen | 2,577 | - - | 2,577 | - - |
| Basswood | 194 | - - | 194 | - - |
| Yellow-poplar | 198 | - - | 198 | - - |
| Black walnut | 3,793 | 1,154 | 2,639 | - - |
| Other eastern soft hardwoods | 12,232 | 1,370 | 10,862 | - - |
| Other eastern hard hardwoods | 1,380 | 381 | 998 | - - |
| Eastern noncommercial hardwoods | - - | - - | - - | - - |
| Total hardwoods | 75,139 | 12,949 | 62,190 | - - |
| **All species groups** | 79,292 | 14,665 | 64,627 | - - |

All table cells without observations in the inventory sample are indicated by --. Table value of 0 indicates that the volume rounds to less than 1 thousand cubic feet. Columns and rows may not add to their totals due to rounding.

Moser, W. Keith; Brand, Gary J.; Treiman, Thomas; Moltzan, Bruce; Lawrence, Robert. 2004. **Missouri's forest resources in 2002.** Resour. Bull. NC-233. St. Paul, MN: U.S. Department of Agriculture, Forest Service, North Central Research Station. 42 p.

Results of the 2002 annual inventory of Missouri's forest resources show an estimated 14.5 million acres of forest land. The oak-hickory type is the predominant forest type on the landscape, making up over 70 percent of all forested land. Pinyon/juniper (primarily eastern redcedar) is the primary softwood component by acreage, although shortleaf pine makes up the majority of the volume. Between 1989 and 1999-2002, the net volume of all live trees on timberland increased by 24 percent, from 13.8 billion cubic feet to 17.2 billion cubic feet. The continued drought, along with the mature age of many of the oak forests and overstocked forest stands, may worsen oak decline.

KEY WORDS: Annual inventory, forest area, forest type, volume, biomass, Missouri.

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