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# FOREST RESOURCES OF THE LOWER COASTAL PLAIN OF SOUTH CAROLINA

by

A. S. Todd, Jr., Forester
R. B. Craig, Forest Economist
Division of Forest Economics



SOUTHEASTERN FOREST EXPERIMENT STATION
ASHEVILLE, NORTH CAROLINA

I. T. HAIG, Director

In cooperation with
SOUTH CAROLINA STATE COMMISSION OF FORESTRY
COLUMBIA, SOUTH CAROLINA
C. H. Flory, State Forester

## PREFACE

Through the McSweeney-McNary Act of 1928, Congress authorized the Secretary of Agriculture to conduct a comprehensive survey of the forest resources of the United States. The Forest Survey was organized by the Forest Service to carry out the provisions of the Act through Regional Forest Experiment Stations. In the Southeastern States the Forest Survey is an activity in the Division of Forest Economics of the Southeastern Forest Experiment Station, Asheville, North Carolina, and its work is divided into five major phases:

1. Inventory. Determination of the extent, location, and condition of forest lands, and the quantity, species, and quality of timber on these lands.

2. Growth. Determination of the current rate of timber growth.

3. Drain. Determination of the amount of industrial and domestic wood removed from the growing stock and the loss resulting from fire, insects, disease, suppression, and other causes.

4. Requirements. Determination of the current and probable future requirements for all classes of forest products.

5. Analysis. Analysis of the relation of Survey findings to one another and to other economic factors as a basis for public and private policies regarding forest land use and management.

South Carolina was covered by the original Forest Survey in the period 1934-36, and reports presenting its findings have been published. Since then an effort has been made to keep the original inventory up to date by balancing annual growth against timber drain, but better fire protection, better forest management, more intensive use, and other factors have caused changes in the forest growing stock that can only be measured accurately by on-the-ground resurveys. This progress report presents the results of such a resurvey in the lower Coastal Plain of South Carolina, where the field work was done between November, 1946, and March, 1947. Similar reports on the timber inventory of the upper Coastal Plain and Piedmont will be issued as the field and office work is completed. For a description of methods and accuracy, see the Appendix.

### Field Party

M. B. Bryan, Supervisor; F. A. Bennett, R. W. Cooper; N. F. Force; J. H. Davidson; D. W. Warner; H. R. Scott.

## TABLES FOR THE UNIT

AREA



NET VOLUME OF ALL TREES



NET VOLUME OF POLE-TIMBER TREES



NET VOLUME OF SAW TIMBER



AVERAGE VOLUME PER ACRE



## TABLES FOR COUNTIES

CHANGE IN TIMBER VOLUME
SINCE THE ORIGINAL SURVEY

Decreased

| | |
|---|---|
| Pine saw timber | 14 percent |
| Hardwood and cypress saw timber | 22 percent |
| Pines 5.0 inches d.b.h. and larger | 15 percent |

Increased

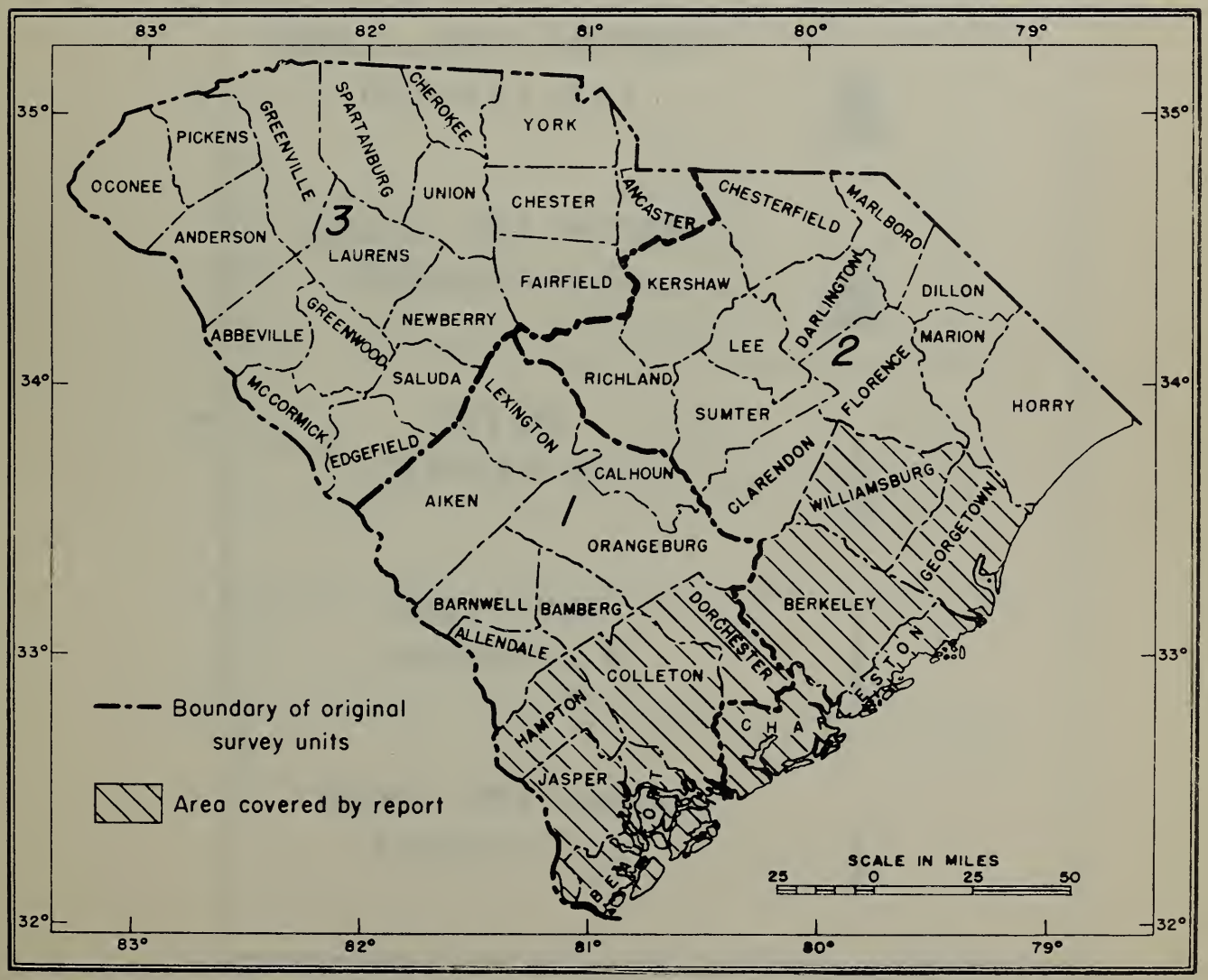
| | |
|---|---|
| Hardwood and cypress 5.0 inches d.b.h. and larger | 22 percent |

The original Forest Survey was made in the lower Coastal Plain of South Carolina about twelve years ago. Since then some of the best hardwood timberland has been flooded by waters of the Pinopolis Reservoir, furniture and veneer plants have increased their requirements for good-quality hardwoods, and large pulpmills have been built at Charleston and Georgetown. In addition, new pulpmills in Georgia and North Carolina have added to the demand for pulpwood. All of this, superimposed upon a high level of lumber production, has caused a reduction in all classes of timber except the hardwoods and cypress of less than saw-timber size.

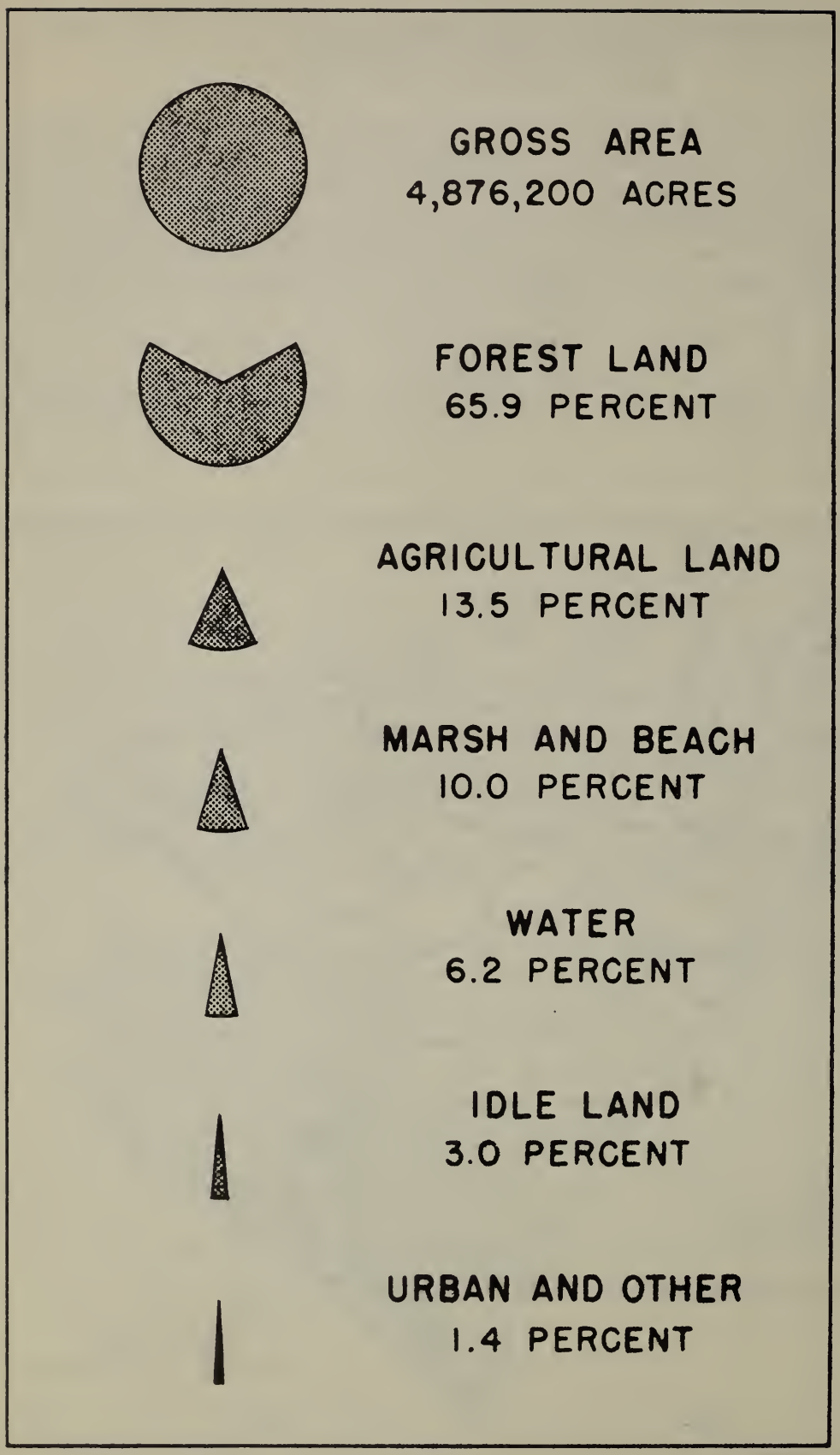
The above percentage changes are based upon a comparison of the original Forest Survey inventory in nine counties of the lower Coastal Plain with a new inventory obtained by resurvey in early 1947. For the purpose of this comparison, the original survey definition of hardwood saw timber (trees 13 inches d.b.h. and larger) has been used. Elsewhere in this report, saw-timber volumes include the board-foot contents of hardwoods 11 to 13 inches d.b.h., as well, to accord with the closer utilization practices now prevailing. However, certain other changes of definition which could not be adjusted tend to reduce the validity of the comparison, and the adoption of new form-class volume tables for the 1947 survey introduces the possibility of additional differences. For these reasons, the values given should be considered only as approximations of the actual changes.

# FOREST RESOURCES OF THE LOWER COASTAL PLAIN OF SOUTH CAROLINA

The area covered by this report consists of the nine counties of Beaufort, Berkeley, Charleston, Colleton, Dorchester, Georgetown, Hampton, Jasper, and Williamsburg. About one-half the area, bordering the ocean, lies in the flatwoods, where elevations seldom exceed 50 feet above sea-level. The remainder of the area lies at elevations ranging up to about 200 feet, with slightly more pronounced relief. The total area is 4,876,200 acres, of which 3,215,500 acres are forested. Loblolly pine is the leading tree species. The net volume of saw timber, of all species, is 10.9 billion board feet. The volume of both pole-timber and saw-timber trees is 47.8 million cords, 47 percent softwood.




The area includes parts of original South Carolina Survey Units 1 and 2




Sixty-six percent of the gross area of the unit is forest land.

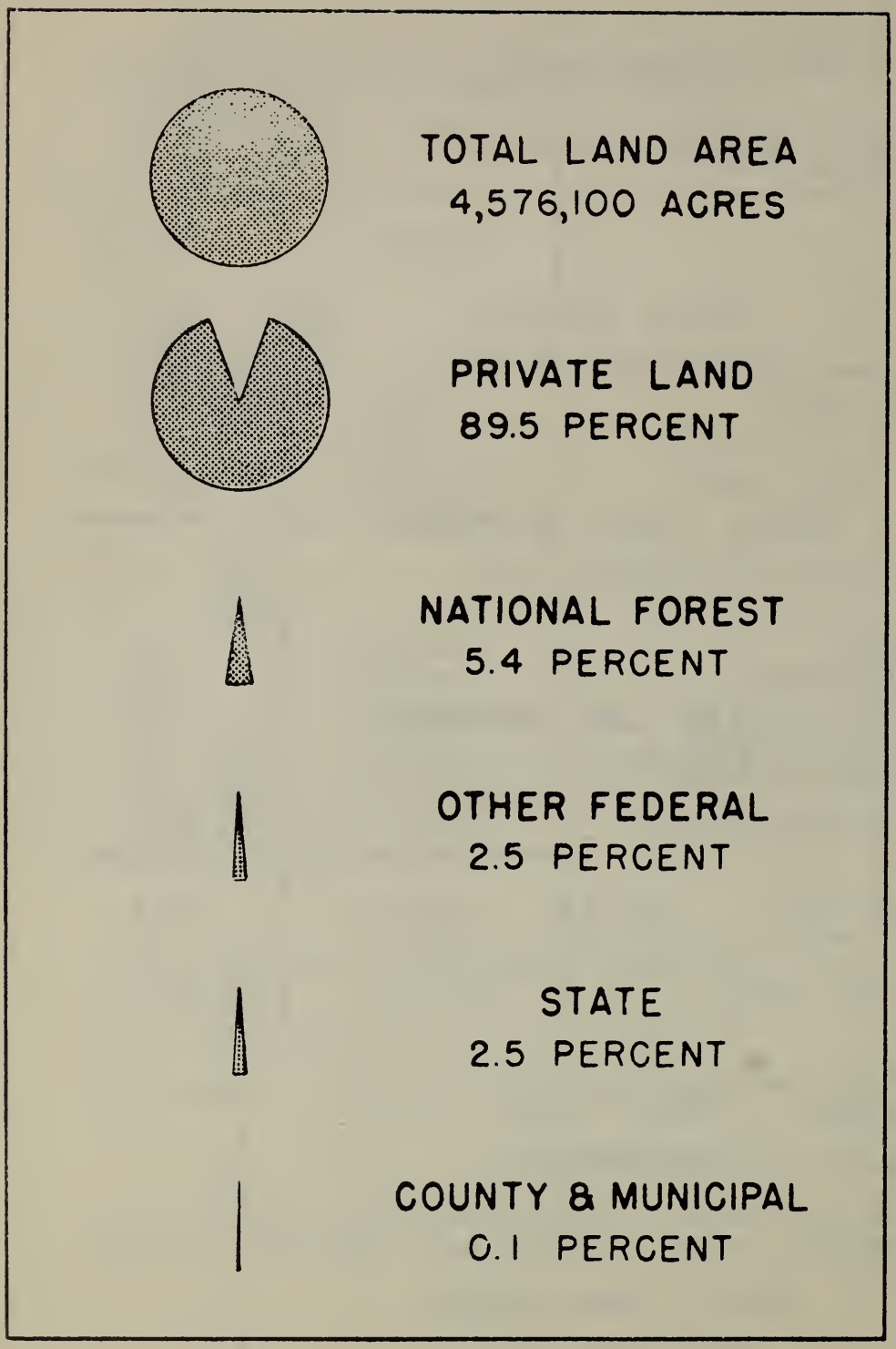
Table 1. - Gross area[1/] by broad use class, 1947

| Class of use | Area | |
|---|---|---|
| | Acres | Percent |
| Forest: | | |
| Commercial | 3,205,100 | 65.7 |
| Withdrawn | 8,600 | 0.2 |
| Non-productive | 1,800 | 2/ |
| Total forest | 3,215,500 | 65.9 |
| Non-forest: | | |
| Idle | 148,200 | 3.0 |
| Agriculture | 656,100 | 13.5 |
| Marsh | 465,000 | 9.5 |
| Dune and beach | 23,000 | 0.5 |
| Urban and other[3/] | 68,300 | 1.4 |
| Total non-forest | 1,360,600 | 27.9 |
| Total land | 4,576,100 | 93.8 |
| Total water | 300,100 | 6.2 |
| All classes | 4,876,200 | 100.0 |

1/ From Area of the United States, 1940, Bureau of the Census.

2/ Less than 0.05 percent.

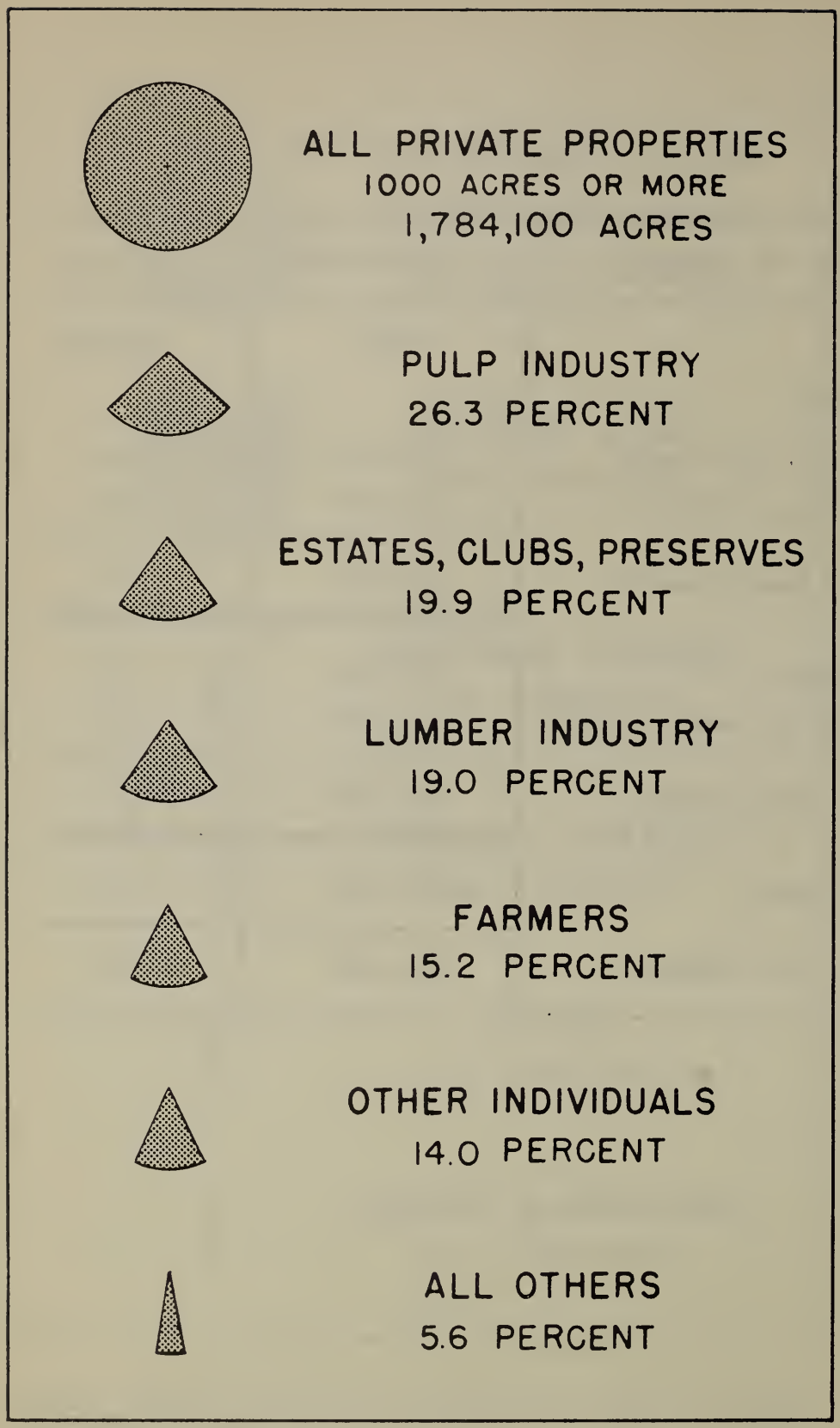
3/ Includes urban, suburban residential, and rural industrial areas, rights-of-way, cemeteries, schools, etc.




Private owners own 89 out of every 100 acres of land; the federal government owns 8; and the state, county, and municipal governments own only 3 acres per 100.

Table 2. - Ownership of all land, 1947

| Class of ownership | Distribution of all land | |
|---|---|---|
| | Acres | Percent |
| Public: | | |
| National forest | 245,400 | 5.4 |
| Other federal | 116,700 | 2.5 |
| Total federal | 362,100 | 7.9 |
| State | 112,800 | 2.5 |
| County and municipal | 7,400 | 0.1 |
| Total public | 482,300 | 10.5 |
| Private: | 4,093,800 | 89.5 |
| All classes | 4,576,100 | 100.0 |



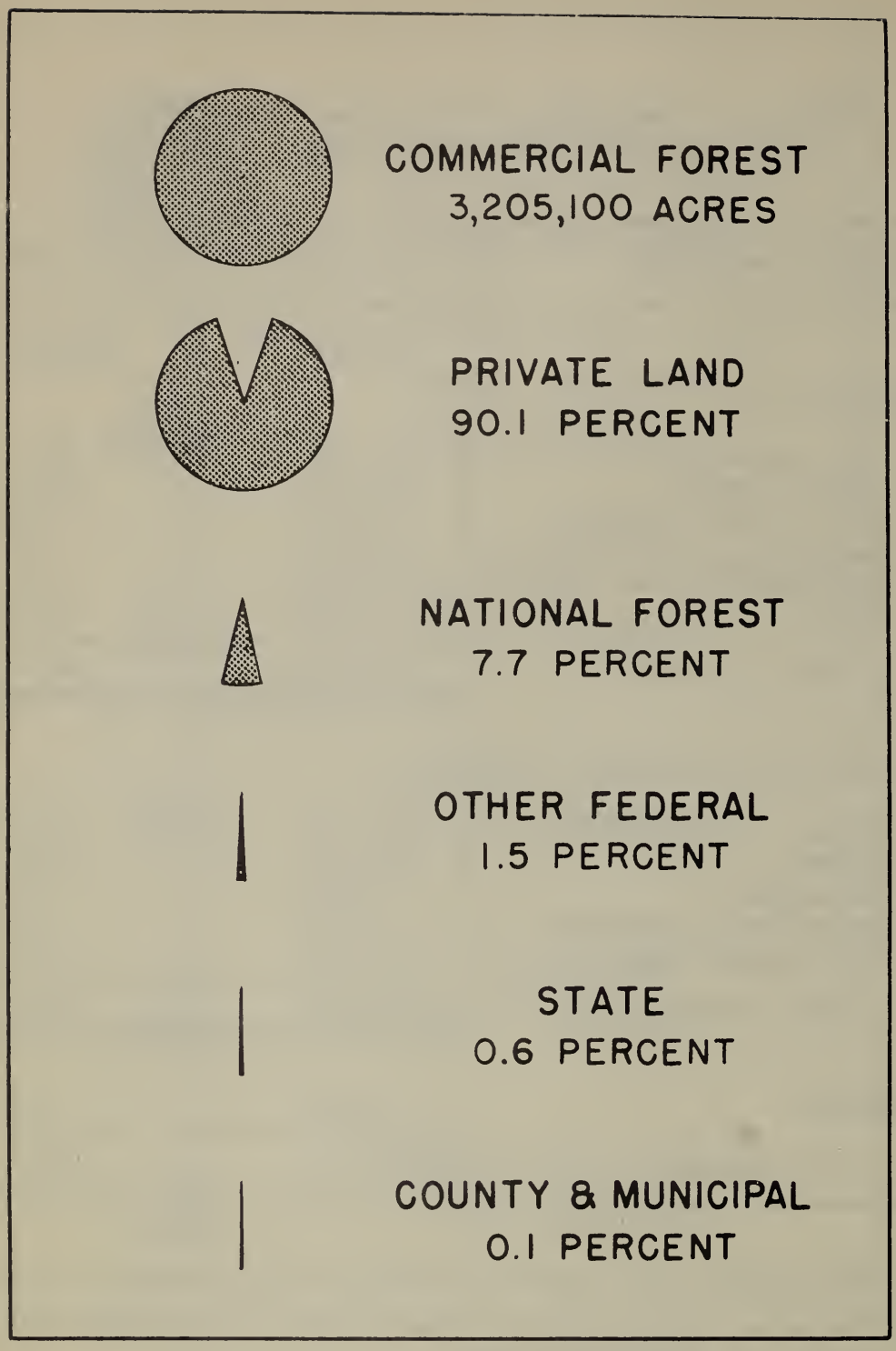

Thirty-nine percent of all the land (forest and non-forest) is in private ownerships of 1,000 acres or more. The pulp industry owns the largest share of this land.

Table 3. - Ownership of all private properties of 1,000 acres or more, 1946[1/]

| Class of ownership | Distribution of all land[2/] | |
|---|---|---|
| | Acres | Percent |
| Corporate: | | |
| Pulp company | 468,900 | 26.3 |
| Lumber company | 243,100 | 13.6 |
| Other forest industry | 18,600 | 1.0 |
| Bank, loan, and insurance | 19,000 | 1.1 |
| Railroad | 17,600 | 1.0 |
| Other | 13,300 | 0.7 |
| Total corporate | 780,500 | 43.7 |
| Individual: | | |
| Estate, club, preserve | 355,000 | 19.9 |
| Farmer | 270,900 | 15.2 |
| Lumberman | 97,100 | 5.4 |
| Other forest industry | 9,800 | 0.6 |
| Other individual | 249,900 | 14.0 |
| Total individual | 982,700 | 55.1 |
| Unknown | 20,900 | 1.2 |
| All classes | 1,784,100 | 100.0 |

1/ Data taken from county tax rolls, as of January 1, 1946.

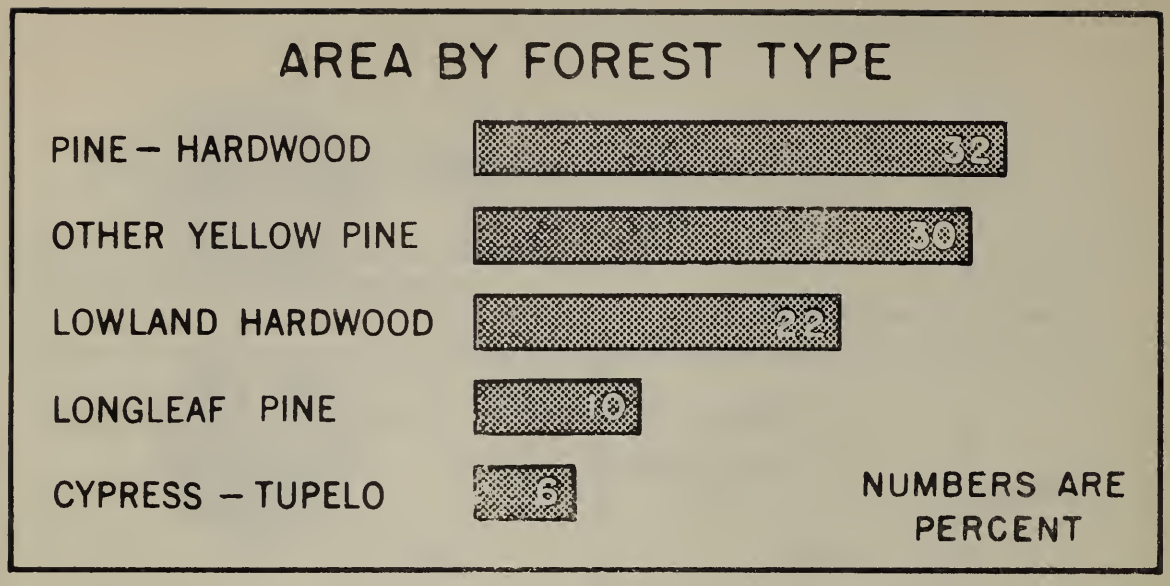
2/ Includes forest and non-forest land on properties 1,000 acres and larger in size.



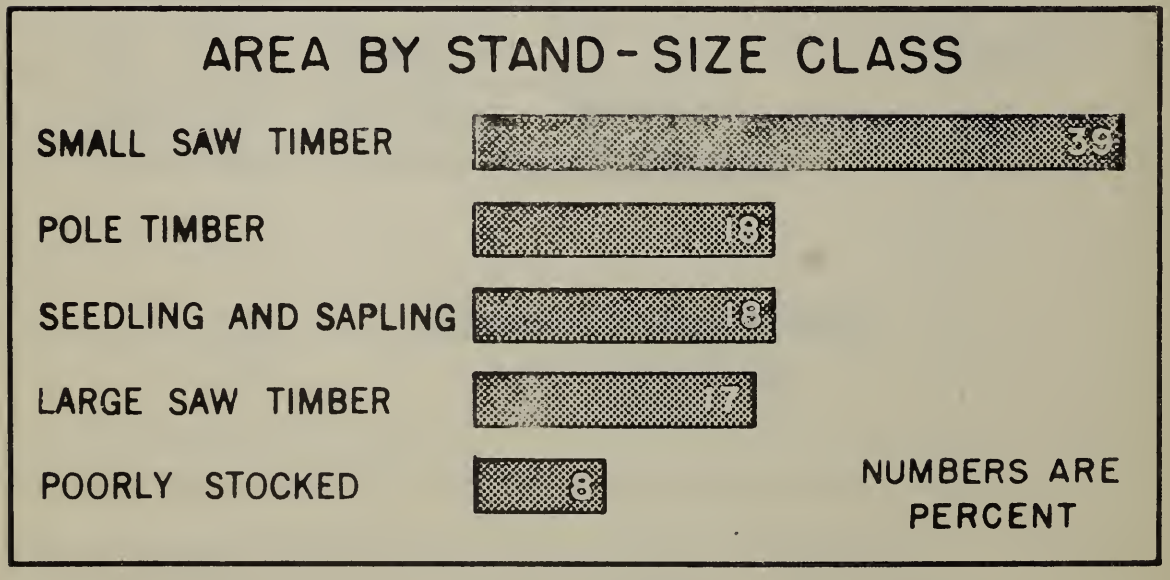

Ninety percent of the forest land used for commercial timber production is in private ownership. The Francis Marion National Forest in Berkeley and Charleston Counties is the only large block of publicly owned forest.

Table 4. - Ownership of commercial forest land, 1947

| Class of ownership | Distribution of commercial forest land | |
|---|---|---|
| | Acres | Percent |
| Public: | | |
| National forest | 245,200 | 7.7 |
| Other federal | 48,000 | 1.5 |
| Total federal | 293,200 | 9.2 |
| State | 18,400 | 0.6 |
| County and municipal | 4,500 | 0.1 |
| Total public | 316,100 | 9.9 |
| Private: | 2,889,000 | 90.1 |
| All classes | 3,205,100 | 100.0 |




Yellow pine types occupy 72 percent of the forest. Hardwoods are largely restricted to swamps, stream bottoms, and poorly drained flats.

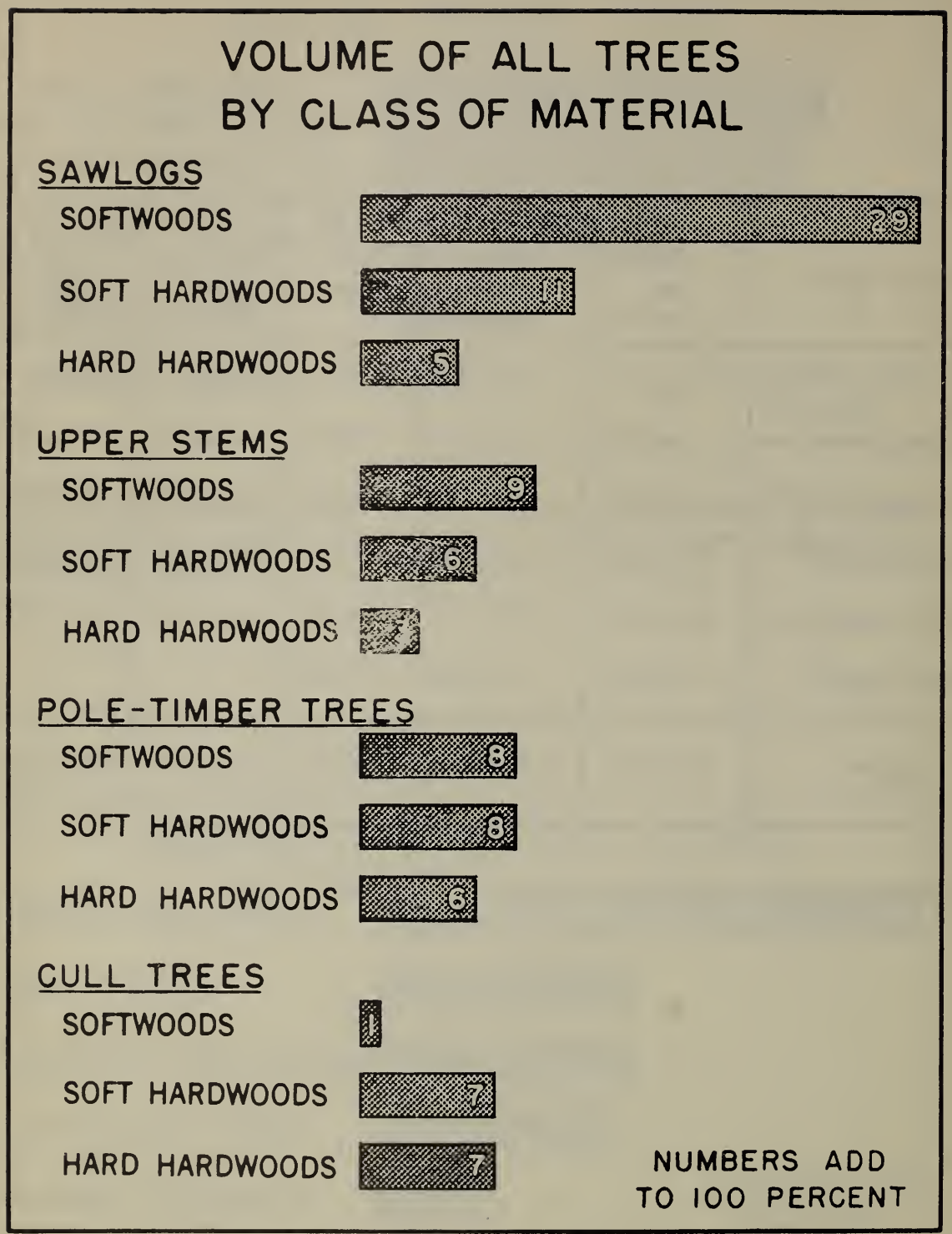



Saw-timber stands occupy 56 percent of the land. Large saw timber is more abundant than elsewhere in the state.

Table 5. - Commercial forest area by forest type and stand-size class, 1947

| Forest type | Large saw timber | Small saw timber | Pole timber | Seedling and sapling | Poorly stocked and denuded | All classes |
|---|---|---|---|---|---|---|
| | Acres | Acres | Acres | Acres | Acres | Acres |
| Longleaf pine | 12,500 | 151,800 | 85,000 | 13,300 | 48,900 | 311,500 |
| Other yellow pine | 174,300 | 440,700 | 146,900 | 124,600 | 76,900 | 963,400 |
| Pine-hardwood[1/] | 173,700 | 246,400 | 160,000 | 408,300 | 45,400 | 1,033,800 |
| Lowland hardwood | 163,500 | 311,500 | 125,300 | 45,600 | 71,500 | 717,400 |
| Cypress-tupelo | 33,200 | 92,400 | 53,400 | -- | -- | 179,000 |
| All types | 557,200 | 1,242,800 | 570,600 | 591,800 | 242,700 | 3,205,100 |

1/ Includes a small area in the upland hardwood type.




Forty-five percent of the net volume of sound wood, expressed in cords, is in sawlogs, 22 percent is in pole-timber trees, and 33 percent is in cull trees and upper stems and limbs of saw-timber trees.

Table 6. - Net volume of all trees, by species group and class of material, 1947 1/

| Species group | Saw-timber trees | | Pole-timber trees 3/ | Sound portion of cull trees | All classes of material | |
|---|---|---|---|---|---|---|
| | Sawlogs | Upper stems 2/ | | | | |
| | Thousand cords | Thousand cords | Thousand cords | Thousand cords | Thousand cords | Percent |
| Softwoods: | | | | | | |
| Longleaf, slash pine | 2,464 | 833 | 929 | 29 | 4,255 | 8.9 |
| Loblolly pine | 8,162 | 2,610 | 1,429 | 185 | 12,386 | 25.9 |
| Other pines | 1,665 | 552 | 617 | 139 | 2,973 | 6.2 |
| Total pines | 12,291 | 3,995 | 2,975 | 353 | 19,614 | 41.0 |
| Cypress | 1,416 | 399 | 791 | 104 | 2,710 | 5.7 |
| Total softwoods | 13,707 | 4,394 | 3,766 | 457 | 22,324 | 46.7 |
| Hardwoods: | | | | | | |
| Tupelo | 3,020 | 1,779 | 2,273 | 2,052 | 9,124 | 19.1 |
| Sweetgum | 1,693 | 545 | 882 | 595 | 3,715 | 7.8 |
| Soft maple | 553 | 393 | 675 | 668 | 2,289 | 4.8 |
| Yellow-poplar 4/ | 219 | 106 | 128 | 128 | 581 | 1.2 |
| Total soft hdwds. | 5,485 | 2,823 | 3,958 | 3,443 | 15,709 | 32.9 |
| Red oaks | 1,319 | 887 | 933 | 1,670 | 4,809 | 10.1 |
| White oaks | 305 | 212 | 546 | 709 | 1,772 | 3.7 |
| Hickory | 307 | 207 | 227 | 129 | 870 | 1.8 |
| Ash | 280 | 90 | 352 | 271 | 993 | 2.1 |
| Sycamore, birch 5/ | 161 | 114 | 235 | 176 | 686 | 1.4 |
| Holly, dogwood 6/ | 19 | -- | 84 | 32 | 135 | 0.3 |
| Scrub oak 7/ | 26 | -- | 447 | -- | 473 | 1.0 |
| Total hard hdwds. | 2,417 | 1,510 | 2,824 | 2,987 | 9,738 | 20.4 |
| Total hardwoods | 7,902 | 4,333 | 6,782 | 6,430 | 25,447 | 53.3 |
| All species | 21,609 | 8,727 | 10,548 | 6,887 | 47,771 | 100.0 |
| | Percent | Percent | Percent | Percent | Percent | |
| | 45.2 | 18.3 | 22.1 | 14.4 | 100.0 | |

1/ Sound wood and bark in both sound and cull trees 5.0 inches d.b.h. and larger.

2/ No limbs included in softwoods; other species include sections of limbwood that are four feet long and at least four inches in diameter inside bark.

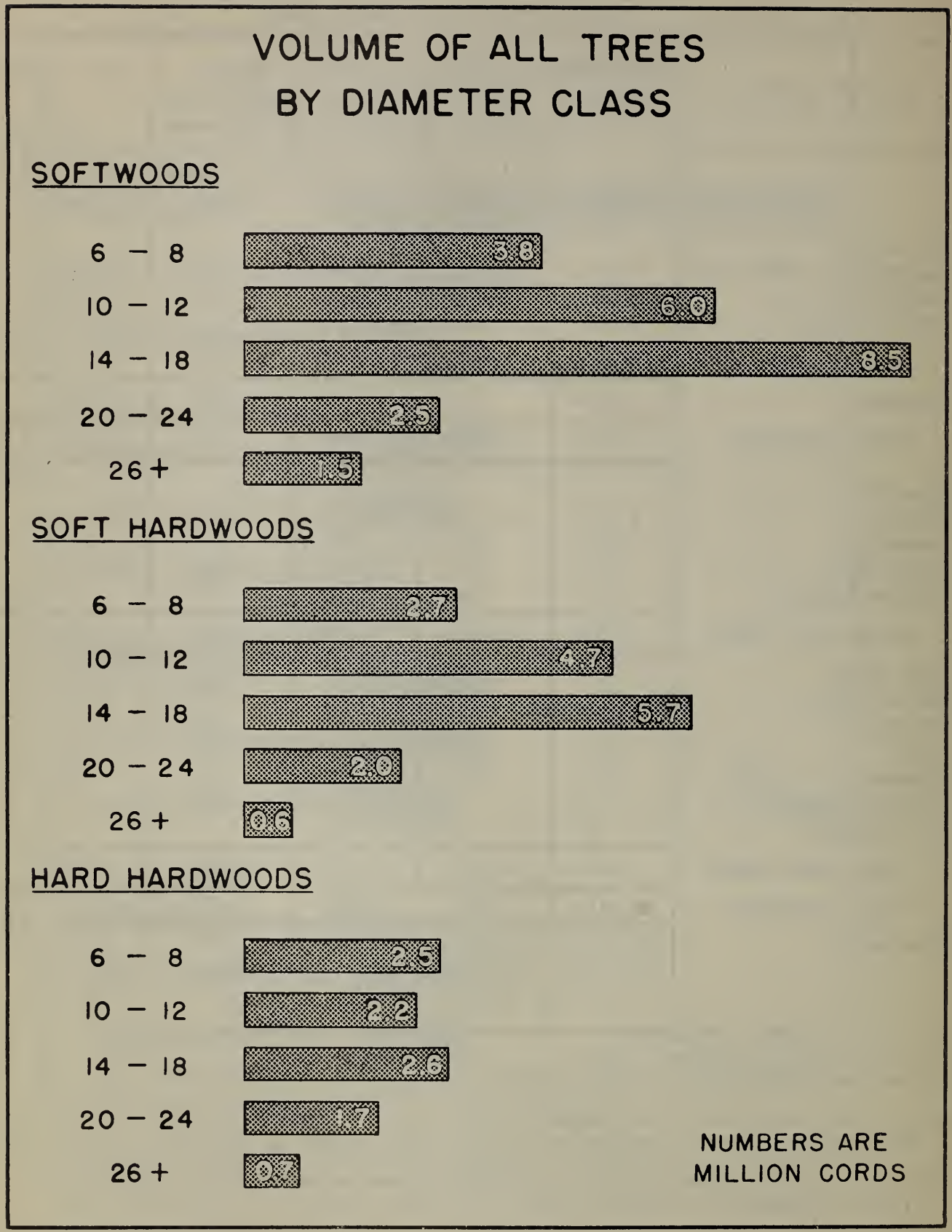
3/ Includes the entire stem to a minimum diameter of 4 inches inside bark. No limbs included.

4/ Includes cottonwood, willow, magnolia, and other soft-textured hardwoods.

5/ Includes beech, elm, and hackberry.

6/ Includes persimmon.

7/ Includes sourwood, ironwood, blue beech, and sassafras.




Nearly 22 million cords, 46 percent of the net volume of sound wood, is in trees less than 13.0 inches d.b.h.

Table 7. - Net volume of all trees, by species group and diameter class, 1947[1/]

(in thousand cords)

| Species group | 6-8 inches | 10-12 inches | 14-18 inches | 20-24 inches | 26 inches and larger | All diameters |
|---|---|---|---|---|---|---|
| Softwoods: | | | | | | |
| Longleaf, slash pine | 930 | 1,497 | 1,583 | 236 | 9 | 4,255 |
| Loblolly pine | 1,442 | 2,815 | 5,079 | 1,897 | 1,153 | 12,386 |
| Other pines | 627 | 1,023 | 1,138 | 145 | 40 | 2,973 |
| Total pines | 2,999 | 5,335 | 7,800 | 2,278 | 1,202 | 19,614 |
| Cypress | 800 | 675 | 701 | 221 | 313 | 2,710 |
| Total softwoods | 3,799 | 6,010 | 8,501 | 2,499 | 1,515 | 22,324 |
| Hardwoods: | | | | | | |
| Tupelo | 1,493 | 2,950 | 3,192 | 1,069 | 420 | 9,124 |
| Sweetgum | 660 | 960 | 1,441 | 542 | 112 | 3,715 |
| Soft maple | 513 | 580 | 892 | 268 | 36 | 2,289 |
| Yellow-poplar[2/] | 82 | 168 | 177 | 89 | 65 | 581 |
| Total soft hdwds. | 2,748 | 4,658 | 5,702 | 1,968 | 633 | 15,709 |
| Red oaks | 856 | 922 | 1,377 | 1,137 | 517 | 4,809 |
| White oaks | 520 | 497 | 411 | 232 | 112 | 1,772 |
| Hickory | 160 | 179 | 326 | 175 | 30 | 870 |
| Ash | 398 | 222 | 206 | 105 | 62 | 993 |
| Sycamore, birch[3/] | 179 | 205 | 277 | 25 | -- | 686 |
| Holly, dogwood[4/] | 68 | 43 | 24 | -- | -- | 135 |
| Scrub oak[5/] | 370 | 99 | 4 | -- | -- | 473 |
| Total hard hdwds. | 2,551 | 2,167 | 2,625 | 1,674 | 721 | 9,738 |
| Total hardwoods | 5,299 | 6,825 | 8,327 | 3,642 | 1,354 | 25,447 |
| All species | 9,098 | 12,835 | 16,828 | 6,141 | 2,869 | 47,771 |
| | Percent | Percent | Percent | Percent | Percent | Percent |
| | 19.0 | 26.9 | 35.2 | 12.9 | 6.0 | 100.0 |

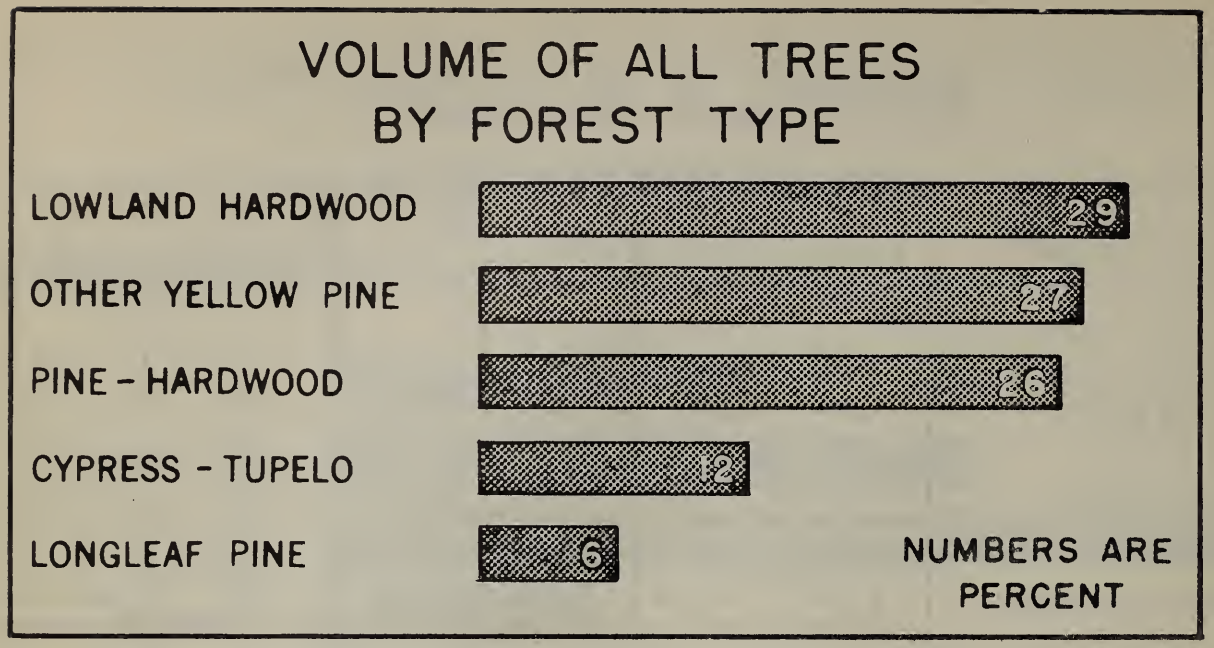
1/ Sound wood and bark in both sound and cull trees 5.0 inches d.b.h. and larger.

2/ Includes cottonwood, willow, magnolia, and other soft-textured hardwoods.

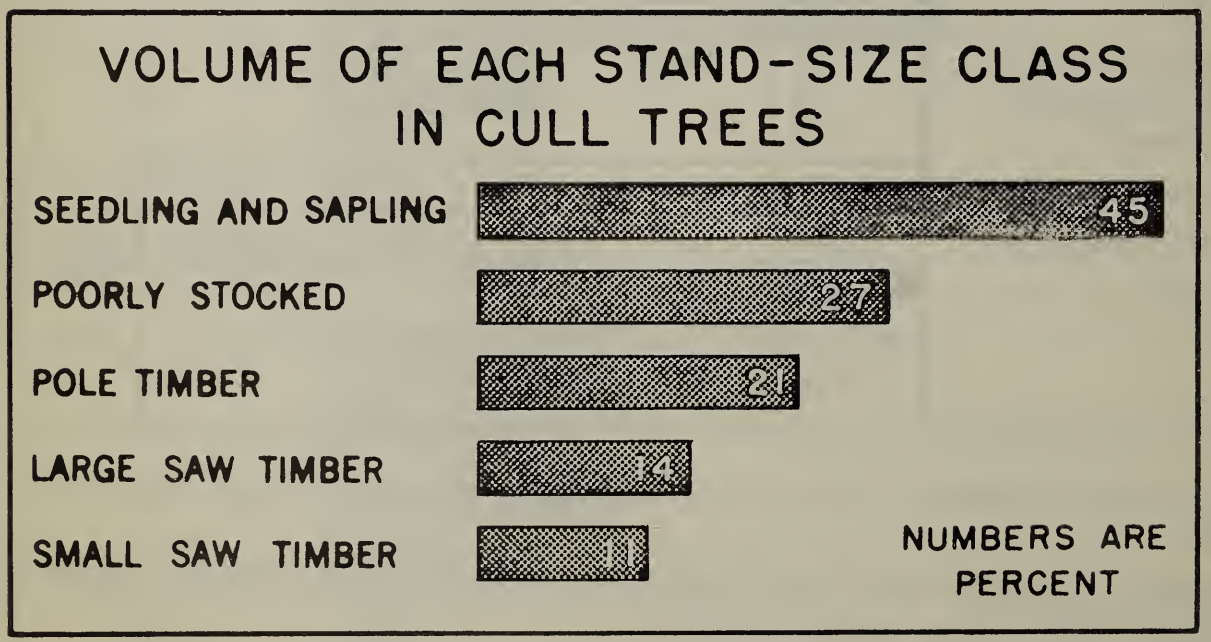
3/ Includes beech, elm, and hackberry.

4/ Includes persimmon.

5/ Includes sourwood, ironwood, blue beech, and sassafras.




Forty-one percent of the net volume measured in cords is in the lowland hardwood and cypress-tupelo types, which together occupy only 28 percent of the forest land.




Low-grade hardwoods are commonly left standing after commercial logging operations. Therefore cull trees make up a large part of the volume in the younger stands.

Table 8. - Net volume of all trees, by forest type and stand-size class, 1947[1/]

SOUND TREES (in thousand cords)

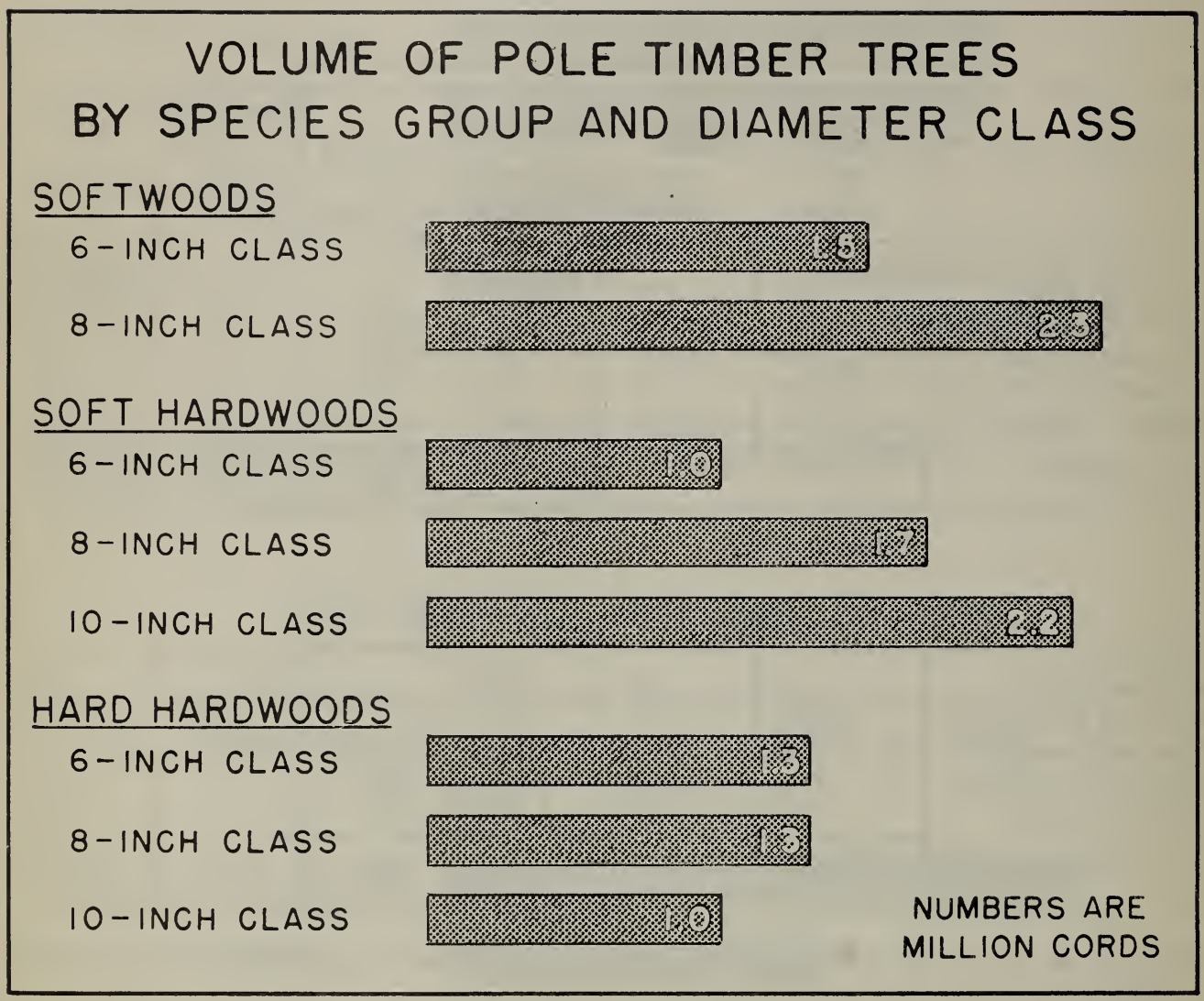
| Forest type | Large saw timber | Small saw timber | Pole timber | Seedling and sapling | Poorly stocked and denuded | All classes |
|---|---|---|---|---|---|---|
| Longleaf pine | 180 | 2,178 | 521 | 10 | 67 | 2,956 |
| Other yellow pine | 4,137 | 6,501 | 860 | 125 | 173 | 11,796 |
| Pine-hardwood[2/] | 4,208 | 3,824 | 999 | 832 | 75 | 9,938 |
| Lowland hardwood | 3,918 | 6,151 | 941 | 71 | -- | 11,081 |
| Cypress-tupelo | 1,383 | 3,363 | 367 | -- | -- | 5,113 |
| All types | 13,826 | 22,017 | 3,688 | 1,038 | 315 | 40,884 |

CULL TREES (in thousand cords)

| | | | | | | |
|---|---|---|---|---|---|---|
| Longleaf pine | 1 | 19 | 13 | 3 | -- | 36 |
| Other yellow pine | 308 | 332 | 176 | 33 | 65 | 914 |
| Pine-hardwood[2/] | 641 | 760 | 374 | 632 | 54 | 2,461 |
| Lowland hardwood | 964 | 1,203 | 417 | 183 | -- | 2,767 |
| Cypress-tupelo | 356 | 342 | 11 | -- | -- | 709 |
| All types | 2,270 | 2,656 | 991 | 851 | 119 | 6,887 |

1/ Sound wood and bark in both sound and cull trees 5.0 inches d.b.h. and larger.

2/ Includes a small volume in the upland hardwood type.




The young growing stock is predominantly of species that are suitable for pulping as 71 percent of the volume is in the pines, gums, soft maple, magnolia, yellow-poplar, and other soft hardwoods.

Table 9. - Net volume of pole-timber trees, by species group and diameter class, 1947[1/]

(in thousand cords)

| Species group | 6 inches | 8 inches | 10 inches | All diameters |
|---|---|---|---|---|
| Softwoods: | | | | |
| Longleaf, slash pine | 366 | 564 | 6/ | 930 |
| Loblolly pine | 559 | 883 | 6/ | 1,442 |
| Other pines | 197 | 430 | 6/ | 627 |
| Total pines | 1,122 | 1,877 | 6/ | 2,999 |
| Cypress | 383 | 417 | 6/ | 800 |
| Total softwoods | 1,505 | 2,294 | 6/ | 3,799 |
| Hardwoods: | | | | |
| Tupelo | 478 | 1,015 | 1,375 | 2,868 |
| Sweetgum | 259 | 401 | 415 | 1,075 |
| Soft maple | 249 | 264 | 324 | 837 |
| Yellow-poplar[2/] | 43 | 39 | 85 | 167 |
| Total soft hdwds. | 1,029 | 1,719 | 2,199 | 4,947 |
| Red oak | 420 | 436 | 400 | 1,256 |
| White oak | 226 | 294 | 214 | 734 |
| Hickory | 70 | 90 | 81 | 241 |
| Ash | 227 | 171 | 109 | 507 |
| Sycamore, birch[3/] | 61 | 118 | 125 | 304 |
| Holly, dogwood[4/] | 34 | 34 | 38 | 106 |
| Scrub oak[5/] | 206 | 164 | 77 | 447 |
| Total hard hdwds. | 1,244 | 1,307 | 1,044 | 3,595 |
| Total hardwoods | 2,273 | 3,026 | 3,243 | 8,542 |
| All species | 3,778 | 5,320 | 3,243 | 12,341 |

1/ Sound wood and bark in both sound and cull pole-timber trees 5.0 inches d.b.h. and larger.

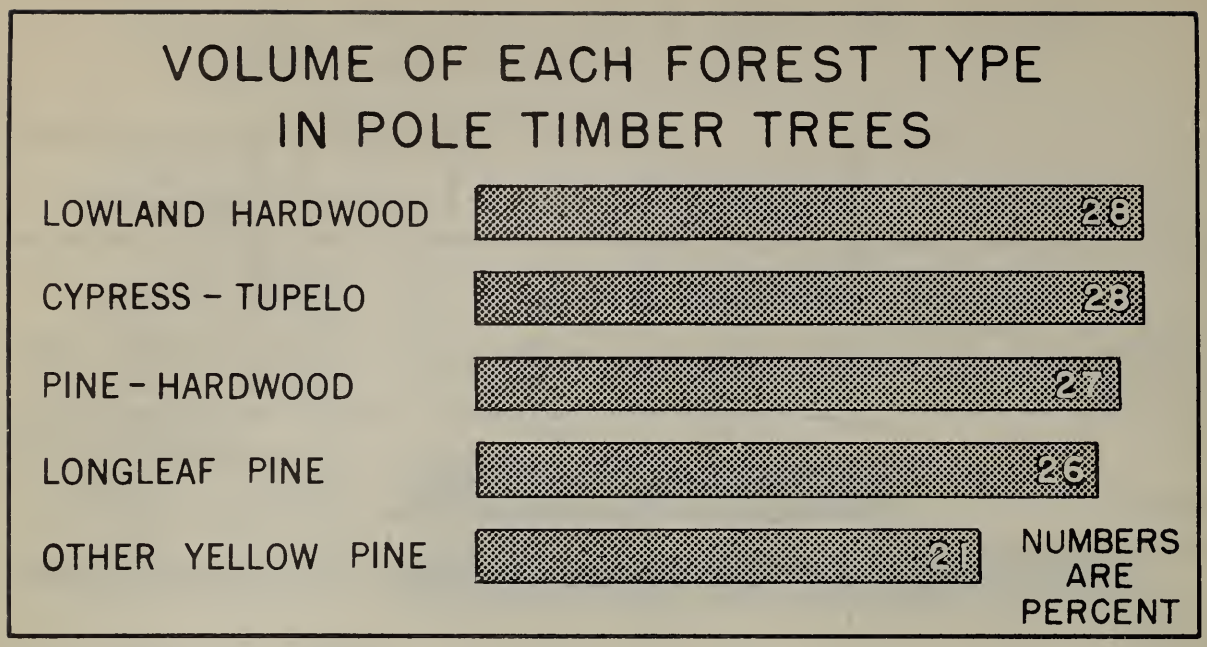
2/ Includes cottonwood, willow, magnolia, and other soft-textured hardwoods.

3/ Includes beech, elm, and hackberry.

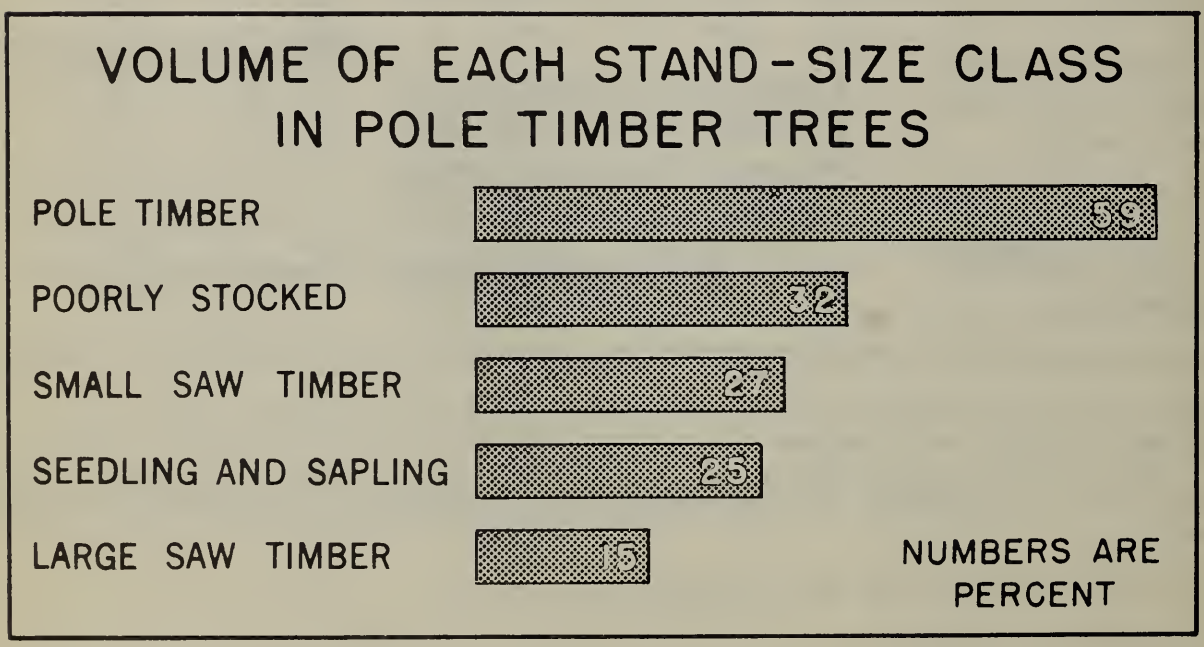
4/ Includes persimmon.

5/ Includes sourwood, ironwood, blue beech, and sassafras.

6/ Softwood trees in the 10-inch class are saw timber.




Between 20 and 30 percent of the net volume, measured in cords, of each forest type is in pole-timber trees.




In each stand-size class there is an intermingling of pole-timber and saw-timber trees. In small saw-timber stands 27 percent of the net volume measured in cords is in pole-timber trees, and in pole-timber stands 41 percent of the volume is in saw-timber trees.

Table 10. - Net volume of pole-timber trees, by forest type and stand-size class, 1947[1/]

SOUND TREES (in thousand cords)

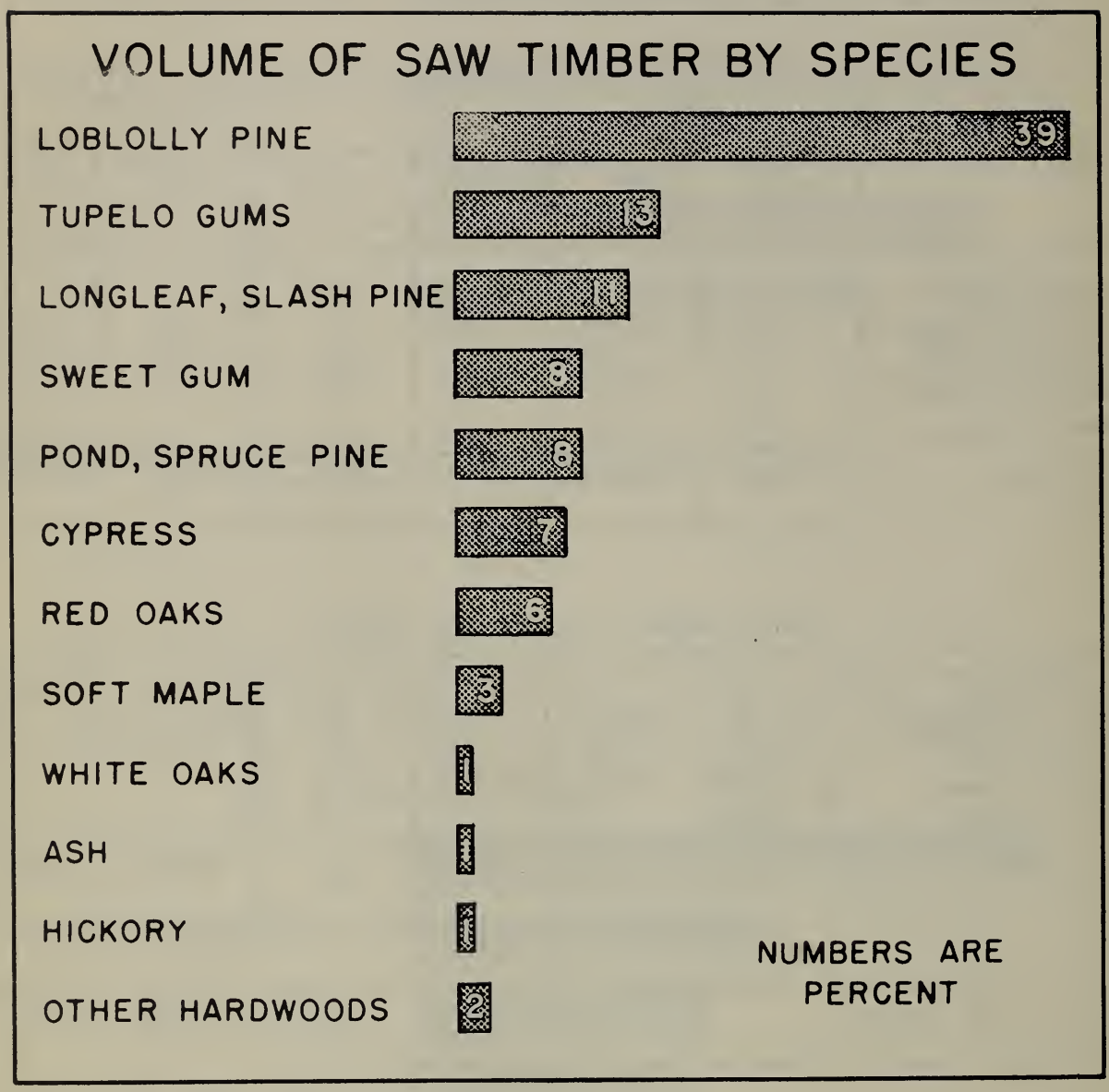
| Forest type | Large saw timber | Small saw timber | Pole timber | Seedling and sapling | Poorly stocked and denuded | All classes |
|---|---|---|---|---|---|---|
| Longleaf pine | 5 | 396 | 347 | 3 | 4 | 755 |
| Other yellow pine | 424 | 1,270 | 496 | 63 | 100 | 2,353 |
| Pine-hardwood[2/] | 639 | 1,278 | 569 | 253 | 30 | 2,769 |
| Lowland hardwood | 629 | 1,881 | 639 | 40 | -- | 3,189 |
| Cypress-tupelo | 186 | 977 | 319 | -- | -- | 1,482 |
| All types | 1,883 | 5,802 | 2,370 | 359 | 134 | 10,548 |

CULL TREES (in thousand cords)

| | | | | | | |
|---|---|---|---|---|---|---|
| Longleaf pine | 1 | 9 | 1 | -- | -- | 11 |
| Other yellow pine | 79 | 191 | 33 | 25 | -- | 328 |
| Pine-hardwood[2/] | 142 | 224 | 143 | 94 | 7 | 610 |
| Lowland hardwood | 207 | 285 | 198 | 3 | -- | 693 |
| Cypress-tupelo | 48 | 95 | 8 | -- | -- | 151 |
| All types | 477 | 804 | 383 | 122 | 7 | 1,793 |

1/ Sound wood and bark in all sound and cull pole-timber trees 5.0 inches d.b.h. and larger.

2/ Includes a small volume in the upland hardwood type.




Fifty-two percent of the saw timber is loblolly pine and the tupelo gums.

Table 11. - Net volume of saw timber, by species group and diameter class, 1947[1/]

(in thousand board feet)

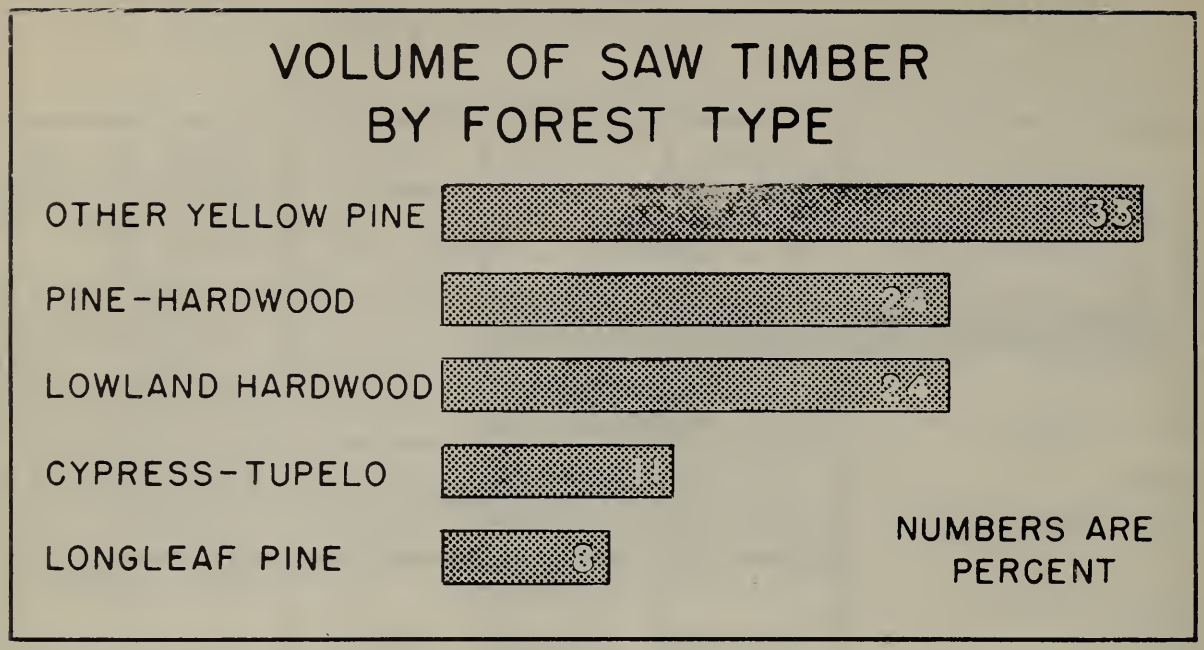
| | 10-12 inches[2/] | 14-18 inches | 20-24 inches | 26+ inches | All diameters |
|---|---|---|---|---|---|
| Softwoods: | | | | | |
| Longleaf, slash pine | 501,800 | 638,100 | 103,300 | 4,300 | 1,247,500 |
| Loblolly pine | 901,600 | 1,992,700 | 811,900 | 511,000 | 4,217,200 |
| Other pines | 301,900 | 437,400 | 62,700 | 16,500 | 818,500 |
| Total pines | 1,705,300 | 3,068,200 | 977,900 | 531,800 | 6,283,200 |
| Cypress | 233,600 | 292,000 | 96,100 | 142,000 | 763,700 |
| Total softwoods | 1,938,900 | 3,360,200 | 1,074,000 | 673,800 | 7,046,900 |
| Hardwoods: | | | | | |
| Tupelo | 340,600 | 803,000 | 203,000 | 53,600 | 1,400,200 |
| Sweetgum | 156,500 | 498,000 | 187,700 | 27,900 | 870,100 |
| Soft maple | 45,300 | 181,900 | 45,200 | 1,300 | 273,700 |
| Yellow-poplar[3/] | 20,300 | 52,700 | 27,700 | 10,000 | 110,700 |
| Red oak | 86,300 | 257,900 | 198,700 | 97,500 | 640,400 |
| White oak | 24,300 | 79,600 | 25,400 | 16,700 | 146,000 |
| Hickory | 19,800 | 74,600 | 37,900 | 8,900 | 141,200 |
| Ash | 29,500 | 57,300 | 39,100 | 20,300 | 146,200 |
| Sycamore, birch[4/] | 14,500 | 60,700 | 1,600 | -- | 76,800 |
| Total hardwoods | 737,100 | 2,065,700 | 766,300 | 236,200 | 3,805,300 |
| All species | 2,676,000 | 5,425,900 | 1,840,300 | 910,000 | 10,852,200 |
| | Percent | Percent | Percent | Percent | Percent |
| | 24.6 | 50.0 | 17.0 | 8.4 | 100.0 |

1/ According to International 1/4-inch log rule.

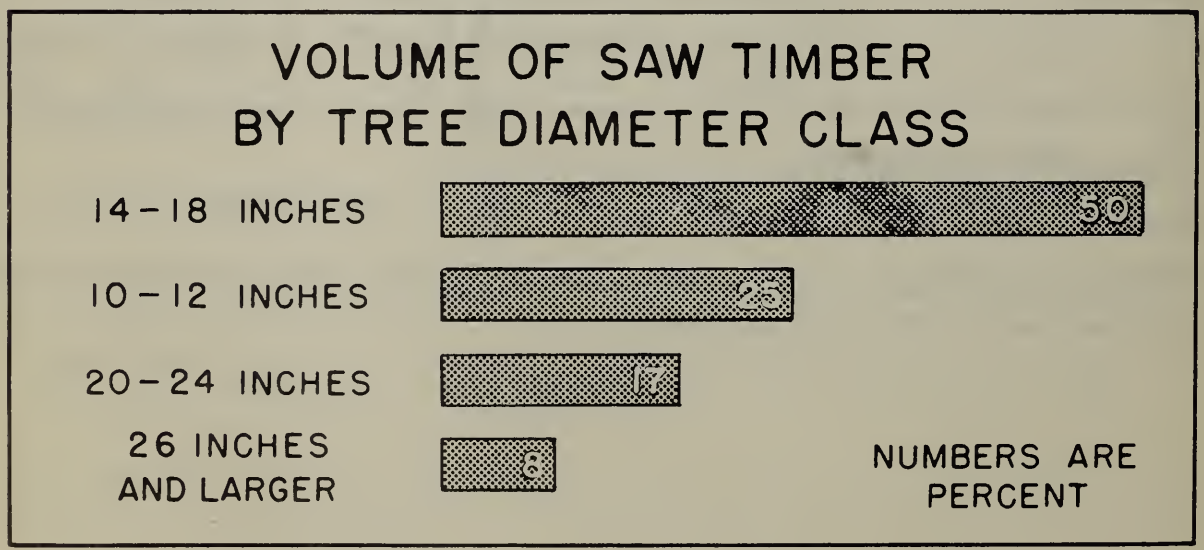
2/ Ten-inch hardwoods are not included.

3/ Includes cottonwood, willow, magnolia, and other soft-textured hardwoods.

4/ Includes beech, elm, and hackberry.




The pine types contain the largest share of the saw timber, yet 35 percent is in the lowland hardwood and cypress-tupelo types.




Seventy-five percent of the saw timber is in trees over 13.0 inches in diameter at breast height.

Table 12. - Net volume of saw timber, by forest type and stand-size class, 1947[1/]

(in thousand board feet)

| Forest type | Large saw timber | Small saw timber | Pole timber | Seedling and sapling | Poorly stocked and denuded | All classes |
|---|---|---|---|---|---|---|
| Longleaf pine | 75,300 | 656,600 | 62,000 | 3,000 | 28,500 | 825,400 |
| Other yellow pine | 1,492,900 | 1,911,100 | 123,600 | 22,700 | 28,100 | 3,578,400 |
| Pine-hardwood | 1,387,300 | 888,900 | 145,200 | 212,500 | 14,500 | 2,648,400 |
| Lowland hardwood[2/] | 1,111,900 | 1,360,800 | 104,700 | 9,300 | -- | 2,586,700 |
| Cypress-tupelo | 427,800 | 768,500 | 17,000 | -- | -- | 1,213,300 |
| All types | 4,495,200 | 5,585,900 | 452,500 | 247,500 | 71,100 | 10,852,200 |
| | Percent | Percent | Percent | Percent | Percent | Percent |
| | 41.4 | 51.5 | 4.2 | 2.3 | 0.6 | 100.0 |

1/ According to International 1/4-inch rule.

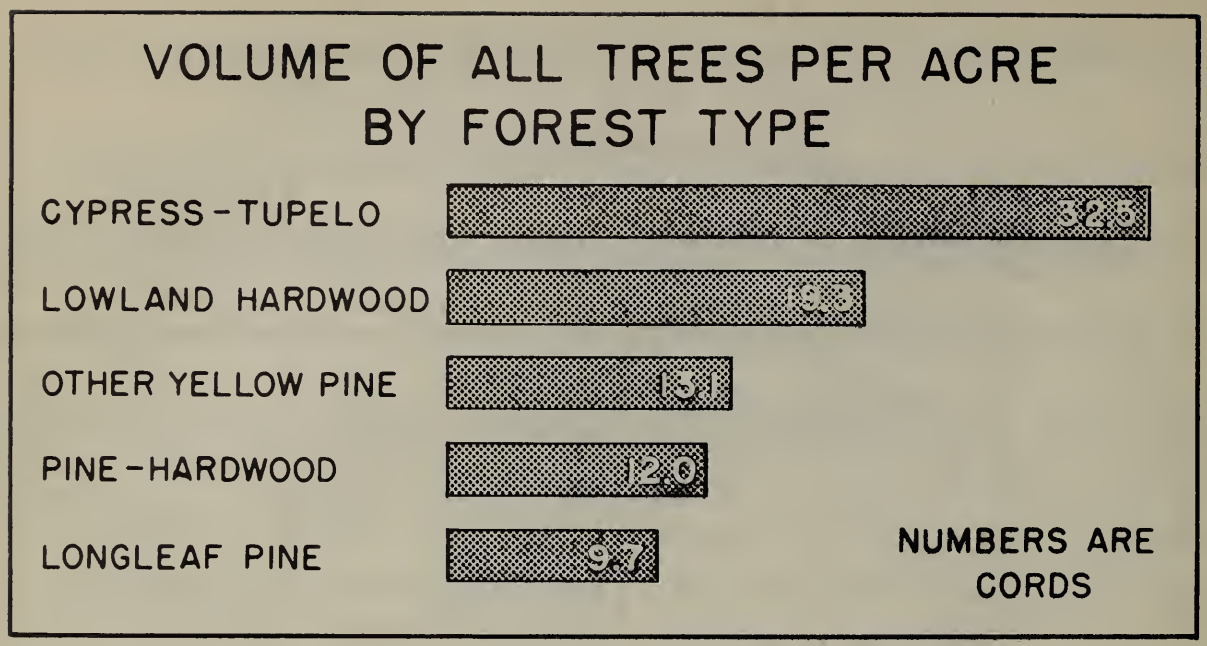
2/ Includes a small volume in the upland hardwood type.

Table 13. - Net volume of saw timber, by stand-size class and diameter class, 1947[1/]

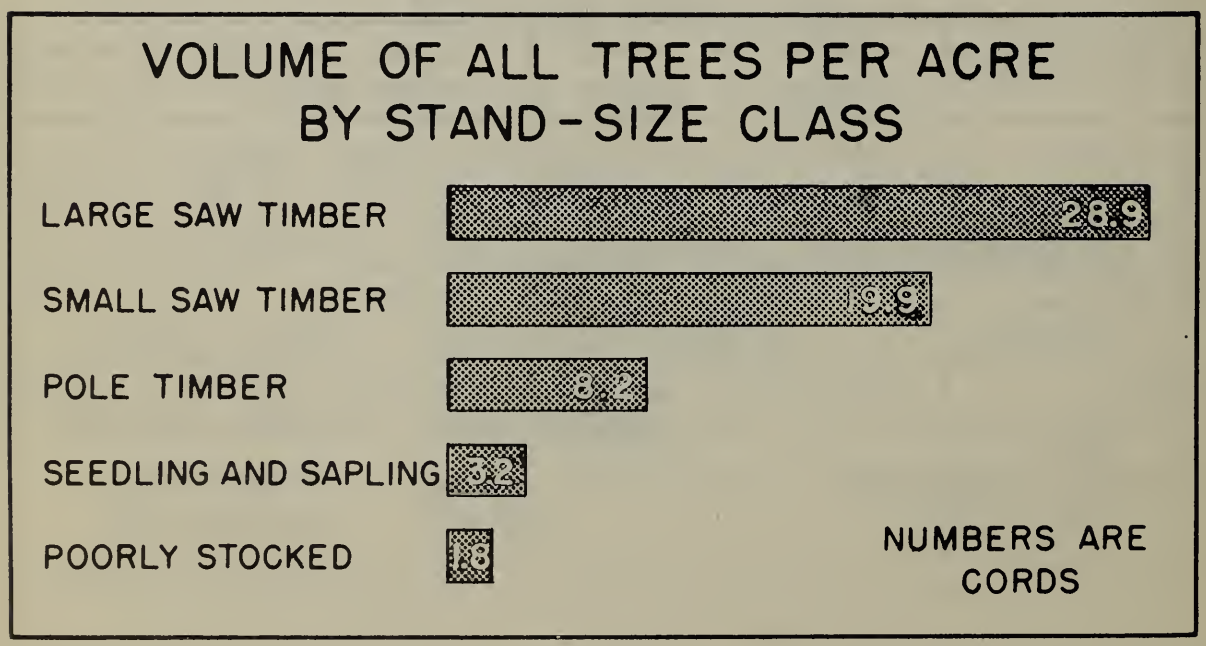
(in thousand board feet)

| Stand-size class | 10-12 inches | 14-18 inches | 20-24 inches | 26+ inches | All diameters |
|---|---|---|---|---|---|
| Large saw timber | 378,100 | 1,993,100 | 1,365,000 | 759,000 | 4,495,200 |
| Small saw timber | 1,990,900 | 3,066,200 | 402,100 | 126,700 | 5,585,900 |
| Pole timber | 217,500 | 178,400 | 32,300 | 24,300 | 452,500 |
| Seedling and sapling | 79,500 | 154,900 | 13,100 | -- | 247,500 |
| Poorly stocked and denuded | 10,000 | 33,300 | 27,800 | -- | 71,100 |
| All classes | 2,676,000 | 5,425,900 | 1,840,300 | 910,000 | 10,852,200 |

1/ According to International 1/4-inch rule.




The average volume in cords per acre ranges from 9.7 in the longleaf pine type to 32.5 in the cypress-tupelo type. In both the lowland hardwood and cypress-tupelo types, the volume of cull trees averages nearly 4 cords per acre.




The average volume per acre of all stands is 14.8 cords, of which 2.1 cords are in cull trees.

Table 14. - Average volume, in cords per acre, of all trees, by forest type and stand-size class, 1947[1/]

SOUND TREES

| Forest type | Large saw timber | | Small saw timber | | Pole timber | | Seedling and sapling | | Poorly stocked and denuded | | All classes | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | S | H | S | H | S | H | S | H | S | H | S | H |
| Longleaf pine | 14.5 | 3/ | 14.2 | 0.1 | 6.1 | 3/ | 0.8 | 3/ | 1.4 | 3/ | 9.4 | 0.1 |
| Other yellow pine | 20.7 | 3.0 | 13.5 | 1.2 | 5.8 | 3/ | 0.9 | 0.1 | 2.2 | 0.1 | 11.1 | 1.1 |
| Pine-hardwood[2/] | 13.7 | 10.6 | 7.8 | 7.8 | 2.9 | 3.4 | 1.5 | 0.5 | 0.2 | 1.4 | 5.2 | 4.4 |
| Lowland hardwood | 2.9 | 21.1 | 2.0 | 17.7 | 0.4 | 7.1 | 0.6 | 1.0 | 3/ | 3/ | 1.7 | 13.8 |
| Cypress-tupelo | 12.6 | 29.0 | 10.9 | 25.5 | 4.7 | 2.2 | -- | -- | -- | -- | 9.4 | 19.2 |
| All types | 12.7 | 12.1 | 9.4 | 8.3 | 3.8 | 2.7 | 1.3 | 0.5 | 1.0 | 0.3 | 6.8 | 5.9 |

CULL TREES

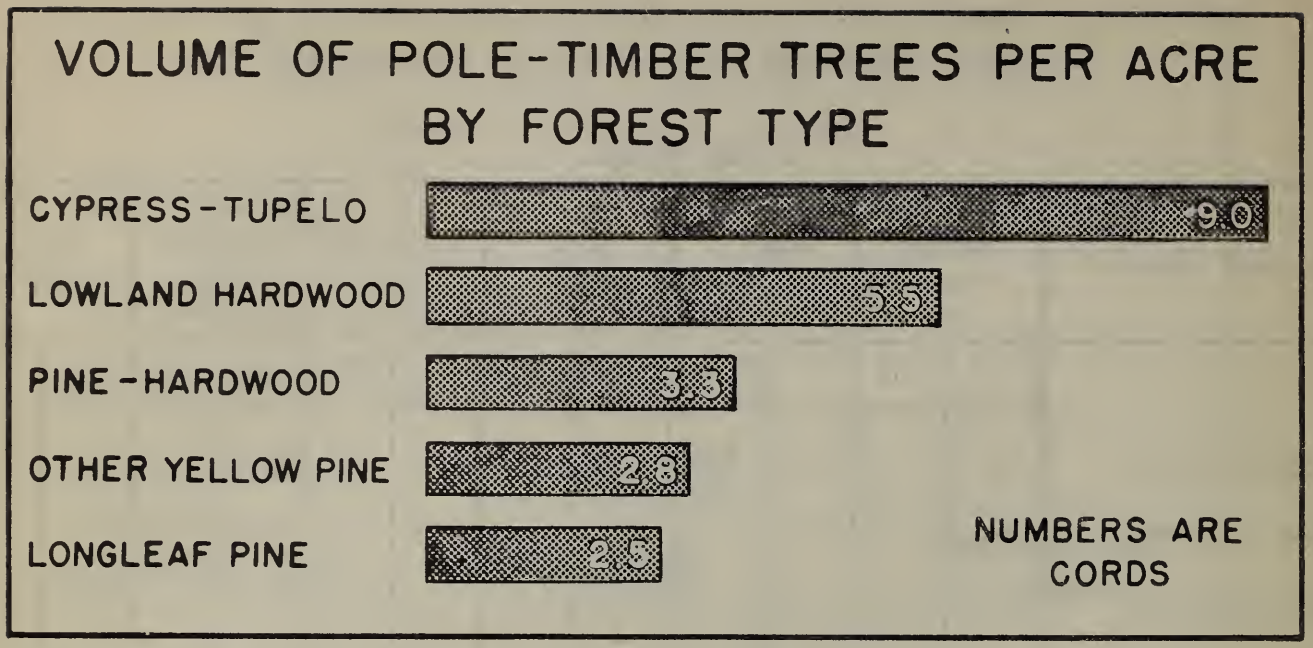
| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Longleaf pine | 3/ | 0.1 | 3/ | 0.1 | 0.1 | 3/ | 0.2 | 3/ | 3/ | 3/ | 0.1 | 0.1 |
| Other yellow pine | 0.2 | 1.5 | 0.1 | 0.7 | 0.6 | 0.6 | 3/ | 0.3 | 0.8 | 3/ | 0.2 | 0.7 |
| Pine-hardwood[2/] | 0.1 | 3.6 | 3/ | 3.1 | 0.5 | 1.9 | 3/ | 1.5 | 0.2 | 1.0 | 0.1 | 2.3 |
| Lowland hardwood | 0.1 | 5.8 | 3/ | 3.8 | 3/ | 3.3 | 0.1 | 3.9 | 3/ | 3/ | 3/ | 3.8 |
| Cypress-tupelo | 1.0 | 9.8 | 0.5 | 3.2 | 3/ | 0.2 | -- | -- | -- | -- | 0.4 | 3.5 |
| All types | 0.2 | 3.9 | 0.1 | 2.1 | 0.3 | 1.4 | 3/ | 1.4 | 0.3 | 0.2 | 0.1 | 2.0 |

S - Softwoods, H - Hardwoods.

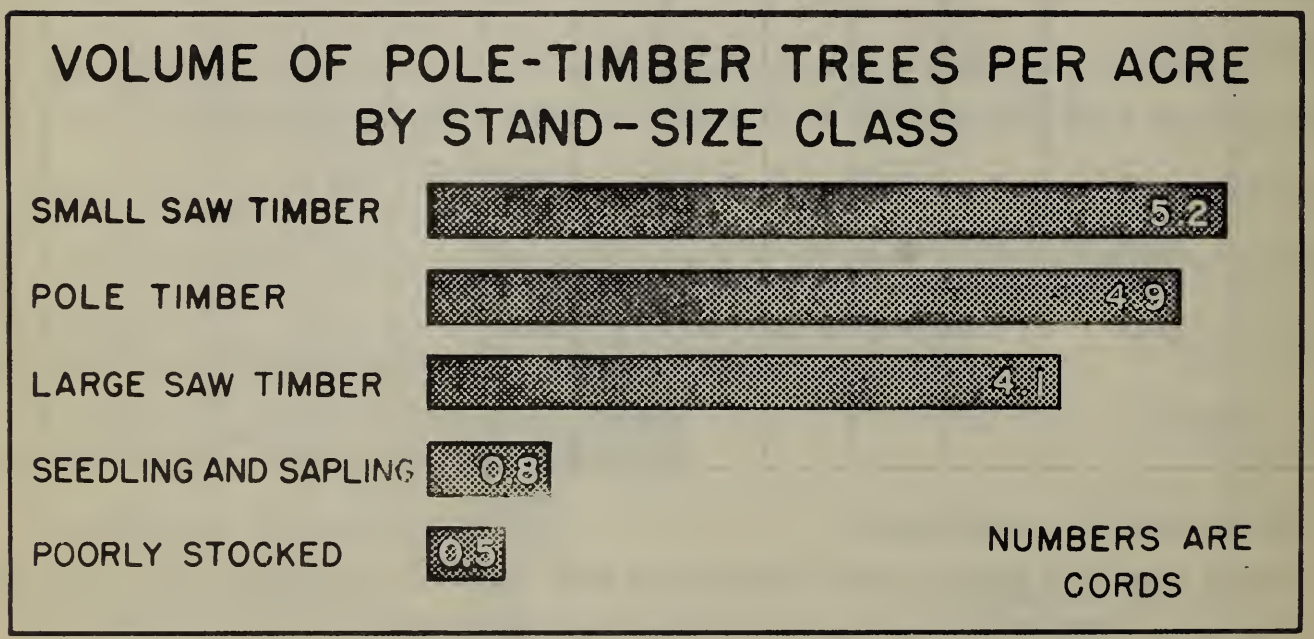
1/ Sound wood and bark in both sound and cull trees 5.0 inches d.b.h. and larger.

2/ Includes a small volume in the upland hardwood type.

3/ Less than 0.05 cords per acre.




The average volume of pole-timber trees per acre ranges from 2.5 cords in the longleaf pine type to 9.0 cords in the cypress-tupelo type. In both the lowland hardwood and cypress-tupelo types, the volume of cull pole-timber trees is about 1 cord per acre; in other types it is less.




The average volume of pole-timber trees per acre is 3.8 cords, of which 0.5 cord is in cull trees.

Table 15. - Average volume, in cords per acre, of pole-timber trees, by forest type and stand-size class, 1947[1/]

SOUND TREES

| Forest type | Large saw timber | | Small saw timber | | Pole timber | | Seedling and sapling | | Poorly stocked and denuded | | All classes | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | S | H | S | H | S | H | S | H | S | H | S | H |
| Longleaf pine | 0.4 | 3/ | 2.5 | 0.1 | 4.1 | 3/ | 0.2 | 3/ | 0.1 | 3/ | 2.4 | 0.1 |
| Other yellow pine | 0.7 | 1.7 | 1.9 | 1.0 | 3.4 | 3/ | 0.4 | 0.1 | 1.3 | 3/ | 1.7 | 0.8 |
| Pine-hardwood[2/] | 0.4 | 3.3 | 1.5 | 3.6 | 1.1 | 2.4 | 0.2 | 0.4 | 3/ | 0.7 | 0.7 | 2.0 |
| Lowland hardwood | 0.2 | 3.7 | 0.3 | 5.8 | 0.1 | 5.1 | 0.3 | 0.6 | 3/ | 3/ | 0.2 | 4.3 |
| Cypress-tupelo | 0.5 | 5.1 | 3.6 | 6.9 | 4.3 | 1.7 | -- | -- | -- | -- | 3.2 | 5.0 |
| All types | 0.4 | 2.9 | 1.6 | 3.0 | 2.2 | 2.0 | 0.2 | 0.4 | 0.4 | 0.1 | 1.2 | 2.1 |

CULL TREES

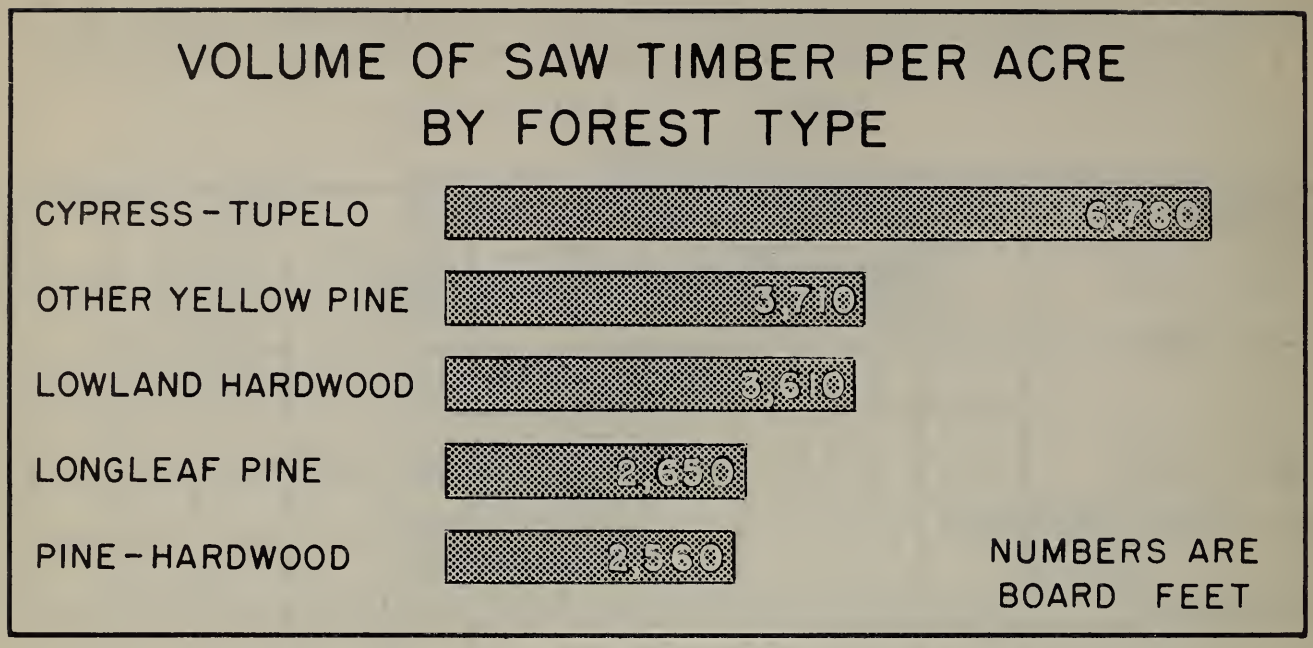
| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Longleaf pine | 3/ | 0.1 | 3/ | 3/ | 3/ | 3/ | 3/ | 3/ | 3/ | 3/ | 3/ | 3/ |
| Other yellow pine | 3/ | 0.4 | 3/ | 0.4 | 3/ | 0.2 | 3/ | 0.2 | 3/ | 3/ | 3/ | 0.3 |
| Pine-hardwood[2/] | 3/ | 0.8 | 3/ | 0.9 | 3/ | 0.9 | 3/ | 0.2 | 3/ | 0.2 | 3/ | 0.6 |
| Lowland hardwood | 3/ | 1.3 | 3/ | 0.9 | 3/ | 1.6 | 3/ | 0.1 | 3/ | 3/ | 3/ | 1.0 |
| Cypress-tupelo | 3/ | 1.4 | 0.1 | 0.9 | 3/ | 0.2 | -- | -- | -- | -- | 3/ | 0.8 |
| All types | 3/ | 0.8 | 3/ | 0.6 | 3/ | 0.7 | 3/ | 0.2 | 3/ | 3/ | 3/ | 0.5 |

S - Softwoods, H - Hardwoods.

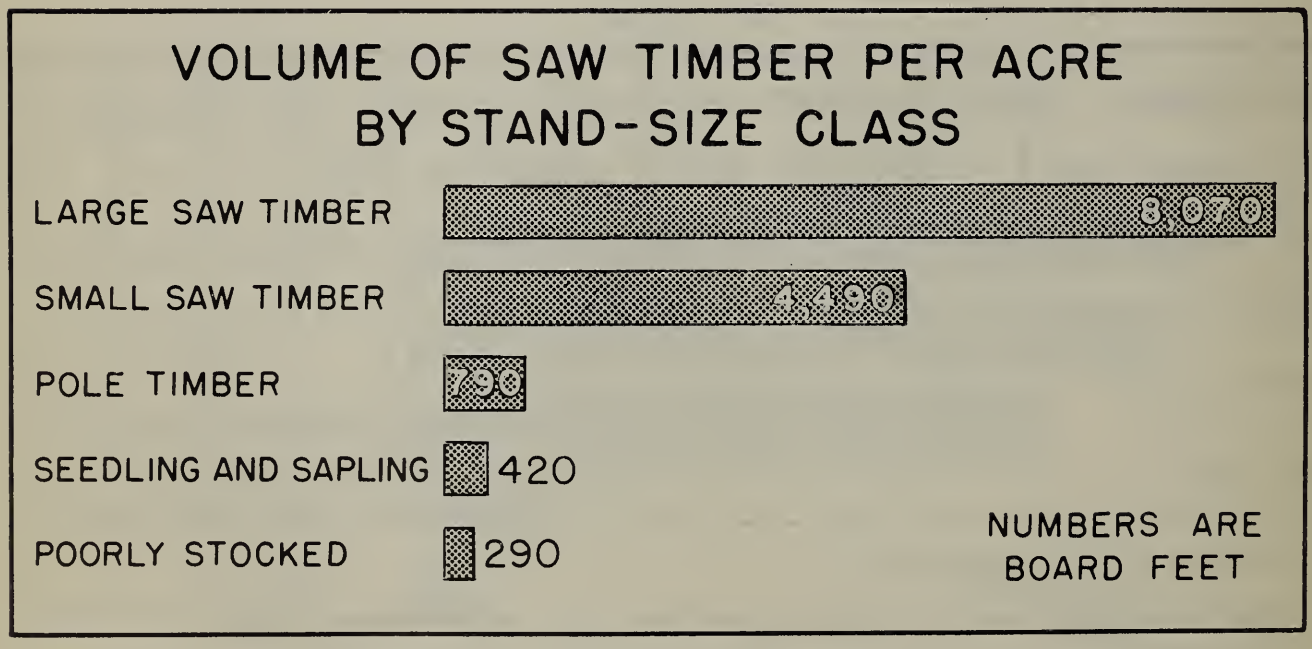
1/ Sound wood and bark in both sound and cull pole-timber trees 5.0 inches d.b.h. and larger.

2/ Includes a small volume in the upland hardwood type.

3/ Less than 0.05 cords per acre.




The average volume of saw timber per forest acre ranges from 2,560 board feet in the pine-hardwood type to 6,780 board feet in the cypress-tupelo type, averaging 3,390 board feet for all types.




The average volume per acre of all saw-timber stands is 5,600 board feet.

Table 16. - Average volume per acre of saw timber, by forest type and stand-size class, 1947 1/

(in board feet)

| Forest type | Large saw timber | | Small saw timber | | Pole timber | | Seedling and sapling | | Poorly stocked and denuded | | All classes | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | S | H | S | H | S | H | S | H | S | H | S | H |
| Longleaf pine | 6,050 | 3/ | 4,320 | 3/ | 730 | 3/ | 220 | 3/ | 580 | 3/ | 2,650 | 3/ |
| Other yellow pine | 8,150 | 410 | 4,240 | 90 | 840 | 3/ | 170 | 10 | 350 | 20 | 3,590 | 120 |
| Pine-hardwood 2/ | 5,660 | 2,330 | 2,340 | 1,270 | 640 | 270 | 480 | 40 | 90 | 230 | 1,800 | 760 |
| Lowland hardwood | 1,180 | 5,620 | 700 | 3,670 | 150 | 680 | 80 | 120 | 3/ | 3/ | 610 | 3,000 |
| Cypress-tupelo | 5,590 | 7,290 | 2,900 | 5,410 | 130 | 190 | -- | -- | -- | -- | 2,580 | 4,200 |
| All types | 5,130 | 2,940 | 2,890 | 1,600 | 550 | 240 | 380 | 40 | 240 | 50 | 2,200 | 1,190 |

S - Softwoods, H - Hardwoods

1/ According to International 1/4-inch log rule.

2/ Includes a small volume in the upland hardwood type.

3/ Less than 10 board feet per acre.

Table 17. - County land area by broad use classes, 1947

| | Total land area[1] | Non-forest land | All forest land | Non-commercial forest[2] | Commercial forest | |
|---|---|---|---|---|---|---|
| | Acres | Acres | Acres | Acres | Acres | Percent |
| Beaufort | 426,500 | 237,100 | 189,400 | 1,500 | 187,900 | 44.1 |
| Berkeley | 685,200 | 92,200 | 593,000 | -- | 593,000 | 86.5 |
| Charleston | 594,100 | 259,900 | 334,200 | 1,300 | 332,900 | 56.0 |
| Colleton | 663,300 | 198,300 | 465,000 | 900 | 464,100 | 70.0 |
| Dorchester | 363,400 | 95,200 | 268,200 | 700 | 267,500 | 73.6 |
| Georgetown | 520,200 | 104,600 | 415,600 | 5,900 | 409,700 | 78.8 |
| Hampton | 359,100 | 119,600 | 239,500 | 100 | 239,400 | 66.7 |
| Jasper | 367,200 | 86,400 | 280,800 | -- | 280,800 | 76.5 |
| Williamsburg | 597,100 | 167,300 | 429,800 | -- | 429,800 | 72.0 |
| Total | 4,576,100 | 1,360,600 | 3,215,500 | 10,400 | 3,205,100 | 70.0 |

1/ Gross area from Bureau of the Census, 1940, less the area of inland water as estimated by the Forest Survey.

2/ Non-productive forest land plus forest withdrawn from commercial timber use.

Table 18. - Ownership of all land, by county, 1947

| County | Private[1/] | | Public | | | | | |
|---|---|---|---|---|---|---|---|---|
| | | | National forest | Other federal | State | County, city, town | Total[1/] | |
| | Acres | Percent | Acres | Acres | Acres | Acres | Acres | Percent |
| Beaufort | 413,300 | 96.9 | -- | 9,200 | 4,000 | -- | 13,200 | 3.1 |
| Berkeley | 394,200 | 57.5 | 186,800 | 12,300 | 90,100 | 1,800 | 291,000 | 42.5 |
| Charleston | 479,000 | 80.6 | 58,600 | 52,900 | 1,500 | 2,100 | 115,100 | 19.4 |
| Colleton | 660,400 | 99.6 | -- | -- | 400 | 2,500 | 2,900 | 0.4 |
| Dorchester | 362,300 | 99.7 | -- | -- | 1,100 | -- | 1,100 | 0.3 |
| Georgetown | 473,700 | 91.1 | -- | 35,600 | 10,000 | 900 | 46,500 | 8.9 |
| Hampton | 353,400 | 98.4 | -- | -- | 5,700 | -- | 5,700 | 1.6 |
| Jasper | 360,400 | 98.1 | -- | 6,700 | -- | 100 | 6,800 | 1.9 |
| Williamsburg | 597,100 | 100.0 | -- | -- | -- | -- | -- | 0.0 |
| Total | 4,093,800 | 89.5 | 245,400 | 116,700 | 112,800 | 7,400 | 482,300 | 10.5 |

1/ Percent is of total land area.

Table 19. - Ownership of all commercial forest land, by county, 1947

| County | Private[1/] | | Public | | | | | |
|---|---|---|---|---|---|---|---|---|
| | | | National forest | Other federal | State | County, city, town | Total[1/] | |
| | Acres | Percent | Acres | Acres | Acres | Acres | Acres | Percent |
| Beaufort | 186,900 | 99.5 | -- | 1,000 | -- | -- | 1,000 | 0.5 |
| Berkeley | 384,800 | 64.9 | 186,800 | 7,100 | 13,100 | 1,200 | 208,200 | 35.1 |
| Charleston | 268,900 | 80.8 | 58,400 | 3,600 | 100 | 1,900 | 64,000 | 19.2 |
| Colleton | 462,700 | 99.7 | -- | -- | -- | 1,400 | 1,400 | 0.3 |
| Dorchester | 267,500 | 100.0 | -- | -- | -- | -- | -- | 0.0 |
| Georgetown | 374,200 | 91.3 | -- | 35,500 | -- | -- | 35,500 | 8.7 |
| Hampton | 234,200 | 97.8 | -- | -- | 5,200 | -- | 5,200 | 2.2 |
| Jasper | 280,000 | 99.7 | -- | 800 | -- | -- | 800 | 0.3 |
| Williamsburg | 429,800 | 100.0 | -- | -- | -- | -- | -- | 0.0 |
| Total | 2,889,000 | 90.1 | 245,200 | 48,000 | 18,400 | 4,500 | 316,100 | 9.9 |

1/ Percent is of total commercial forest area.

Table 20. - Net volume of all trees by pulping preference species and tree-diameter groups, by county, 1947 [1/]

SOUND TREES (in thousand cords)

| County | Yellow pines | | Gums, soft maple and yellow-poplar [2/] | | Other species [3/] | | All species |
|---|---|---|---|---|---|---|---|
| | 5 - 12 inches | 13 + inches | 5 - 12 inches | 13 + inches | 5 - 12 inches | 13 + inches | |
| Beaufort | 393 | 503 | 217 | 205 | 215 | 105 | 1,638 |
| Berkeley | 1,861 | 2,673 | 1,132 | 1,512 | 830 | 1,121 | 9,129 |
| Charleston | 930 | 2,001 | 549 | 525 | 796 | 267 | 5,068 |
| Colleton | 973 | 1,332 | 1,144 | 823 | 931 | 729 | 5,932 |
| Dorchester | 873 | 1,019 | 605 | 871 | 413 | 691 | 4,472 |
| Georgetown | 916 | 1,449 | 1,166 | 1,483 | 696 | 741 | 6,451 |
| Hampton | 334 | 517 | 319 | 182 | 360 | 136 | 1,848 |
| Jasper | 779 | 544 | 430 | 313 | 143 | 169 | 2,378 |
| Williamsburg | 1,062 | 1,102 | 371 | 419 | 570 | 444 | 3,968 |
| Total | 8,121 | 11,140 | 5,933 | 6,333 | 4,954 | 4,403 | 40,884 |

CULL TREES (in thousand cords)

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Beaufort | 24 | 33 | 46 | 42 | 213 | 127 | 485 |
| Berkeley | 20 | 4 | 266 | 339 | 199 | 408 | 1,236 |
| Charleston | 51 | 27 | 208 | 167 | 119 | 176 | 748 |
| Colleton | 25 | 11 | 185 | 160 | 122 | 212 | 715 |
| Dorchester | 21 | 24 | 105 | 150 | 92 | 121 | 513 |
| Georgetown | 23 | 11 | 244 | 385 | 127 | 98 | 888 |
| Hampton | 4 | 6 | 79 | 211 | 34 | 158 | 492 |
| Jasper | 19 | 18 | 181 | 136 | 102 | 118 | 574 |
| Williamsburg | 26 | 6 | 159 | 380 | 231 | 434 | 1,236 |
| Total | 213 | 140 | 1,473 | 1,970 | 1,239 | 1,852 | 6,887 |
| All trees | 8,334 | 11,280 | 7,406 | 8,303 | 6,193 | 6,255 | 47,771 |

1/ Sound wood and bark in sound and cull trees 5.0 inches d.b.h. and larger.

2/ Includes cottonwood, willow, magnolia, and other soft-textured hardwoods.

3/ Includes cypress and the hard-textured hardwoods.

4/ Includes upper stems and limbs 4.0 inches and larger in diameter inside bark.

Table 21. - Net volume of saw timber by species group and county, 1947[1/]

(in thousand board feet)

| County | Softwoods[2/] | Gums, soft maple, and yellow-poplar[3/] | Other hardwoods[4/] | All species |
|---|---|---|---|---|
| Beaufort | 281,500 | 92,300 | 39,400 | 413,200 |
| Berkeley | 1,640,500 | 617,800 | 301,100 | 2,559,400 |
| Charleston | 1,143,200 | 218,800 | 87,700 | 1,449,700 |
| Colleton | 853,100 | 370,800 | 219,200 | 1,443,100 |
| Dorchester | 706,000 | 358,200 | 165,700 | 1,229,900 |
| Georgetown | 1,010,300 | 581,400 | 110,800 | 1,702,500 |
| Hampton | 296,800 | 94,900 | 57,300 | 449,000 |
| Jasper | 389,200 | 149,000 | 56,300 | 594,500 |
| Williamsburg | 726,300 | 171,500 | 113,100 | 1,010,900 |
| Total | 7,046,900 | 2,654,700 | 1,150,600 | 10,852,200 |

1/ According to International 1/4-inch rule.

2/ Includes all pines and cypress.

3/ Includes cottonwood, willow, magnolia, and other soft-textured hardwoods.

4/ Includes the oaks, hickories, ash, sycamore, birch, beech, elm, hackberry.

Table 22. - Net volume of saw timber by broad species and tree-diameter groups, by county, 1947[1/]

(in thousand board feet)

| | Softwoods | | Hardwoods | | Percent | |
|---|---|---|---|---|---|---|
| County | 9 - 14 inches | 15 + inches | 11 - 16 inches | 17 + inches | Soft-woods | Hard-woods |
| Beaufort | 115,600 | 165,900 | 108,100 | 23,600 | 4.0 | 3.5 |
| Berkeley | 740,000 | 900,500 | 513,800 | 405,100 | 23.3 | 24.1 |
| Charleston | 517,600 | 625,600 | 188,600 | 117,900 | 16.2 | 8.0 |
| Colleton | 374,900 | 478,200 | 340,400 | 249,600 | 12.1 | 15.5 |
| Dorchester | 293,400 | 412,600 | 259,800 | 264,100 | 10.0 | 13.8 |
| Georgetown | 502,900 | 507,400 | 388,600 | 303,600 | 14.4 | 18.2 |
| Hampton | 174,700 | 122,100 | 126,200 | 26,000 | 4.2 | 4.0 |
| Jasper | 221,800 | 167,400 | 113,700 | 91,600 | 5.5 | 5.4 |
| Williamsburg | 360,700 | 365,600 | 179,200 | 105,400 | 10.3 | 7.5 |
| Total | 3,301,600 | 3,745,300 | 2,218,400 | 1,586,900 | 100.0 | 100.0 |

1/ According to International 1/4-inch rule.

# APPENDIX

How the Forest Inventory Is Made

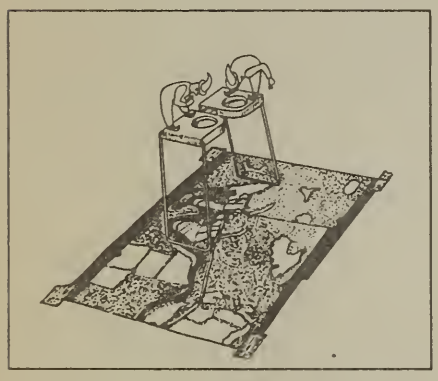
Definition of Terms

Accuracy of Survey

## HOW THE FOREST INVENTORY IS MADE

The present system of inventory is based upon interpretation of aerial photographs supplemented by cruising of randomly selected ground plots. The county is the basic work unit. Steps in the procedure are as follows:

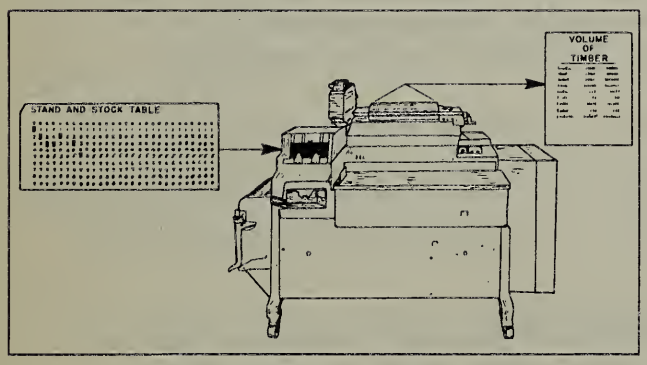
1. Acreages of forest land are estimated with the use of a dot grid placed on every third contact print along flight lines in each county. The proportion of dots falling on forest areas when applied to the gross area of the county yields a preliminary estimate of the acreage of forest land. This is later revised after certain field checks.



2. Every 5th plot listed as forest in step one is classified into forest type, stand class, and density class by careful stereoscopic analysis of the photographs. The proportion of plots falling in each classification when applied to the forest area of the county gives the area in each classification. These areas are revised following ground checking.

3. Timber cruisers make a detailed on-the-ground tally of every 3rd large sawtimber photo plot, every 8th small sawtimber, every 17th pole-timber, and every 30th seedling, sapling, and denuded plot to obtain volume, growth, cull, and mortality data, and to check accuracy of photo classification. They also check a sample of the idle and agricultural plots.

4. Growth estimates are based on increment borings taken from trees of the various diameters and species in each forest type and stand class.




5. All field data are sent to the Asheville office for editing and are placed on punch cards for machine tabulation. Statistical techniques are used to correct for changes in photo classification, and to determine final figures on areas, volumes, and growth.

## DEFINITION OF TERMS

### Land-Use Classes

Forest. Land bearing forest growth, or land from which the forest has been removed and which shows no evidence of any other recent land use. Subdivided into the following classes:

Commercial: Land bearing, or capable of bearing, timber of commercial character and available now or prospectively for commercial use.

Withdrawn: Forest land in public ownership upon which commercial timber cutting is prohibited.

Non-productive: Forest land of such low productivity or so inaccessible that commercial timber will not be produced.

Non-forest. Land less than five percent stocked with trees and showing evidence of non-forest use.

Agriculture: Under cultivation or in pasture, including farm yards on active farms.

Idle: Land previously cultivated or pastured but now idle or abandoned. If reverting to forest there must be less than five percent stocking of trees.

Marsh: Low, boggy, non-forested land usually supporting a heavy growth of grass.

Sand dunes and beach: Non-forested sand dunes or coastal beaches.

Water: Includes both the small ponds and lakes less than 40 acres in size and streams, sloughs, and canals less than 10 chains in width classed as "land area" by the Bureau of the Census. Also includes the "inland water" listed by the Census. On coastal areas the water-line is the mean high tide mark; tidal flats are classed as water.

Urban and other: Includes towns, suburban areas being developed for residential or other urban purposes, school yards, cemeteries, industrial sites, roads, railroads, power lines, and other rights-of-way. Scattered areas of timber within exterior boundaries of cities or villages are also included.

## Forest Types

Longleaf pine. Stands in which coniferous species comprise at least 75 percent of the dominant and co-dominant trees, with longleaf pine predominating.

Other yellow pine. Stands in which coniferous species comprise at least 75 percent of the dominant and co-dominant stems with slash, loblolly, shortleaf, Virginia, or pond pine predominating.

Pine-hardwood. Mixed stands in which pine species and commercial hardwoods each comprise at least 25 percent of the dominant and co-dominant trees.

Lowland hardwood. Stands in which mixed hardwoods, or hardwoods and cypress, comprise at least 75 percent of the dominant and co-dominant trees. Found in swamps and river bottoms in the piedmont and coastal areas and on flat, poorly drained areas of rather large extent in the coastal plain.

Cypress-tupelo. Stands in which cypress and tupelo comprise at least 75 percent of the dominant and co-dominant trees.

## Stand-size Classes

Saw timber. Stands containing at least 1,500 board feet net, International 1/4-inch log rule, per acre in sound, live, softwood trees 9.0 inches d.b.h. or larger or hardwood trees 11.0 inches d.b.h. or larger. Two classes of saw-timber stands are recognized:

> Large saw timber: Stands of saw timber having more than 50 percent of the net board-foot volume in softwood trees 15.0 inches d.b.h. or larger, or hardwood trees 17.0 inches d.b.h. or larger.
>
> Small saw timber: Stands of saw timber having 50 percent or less of the net board-foot volume in softwood trees 15.0 inches d.b.h. or larger, or hardwood trees 17.0 inches d.b.h. or larger.

Pole timber. Stands at least 10 percent stocked with pole-size or larger timber, at least one-half in pole sizes, and which have less than 1,500 board feet net per acre of saw timber.

Seedling and sapling. Stands less than 10 percent stocked by pole-size or larger trees and with less than 1,500 board feet net per acre, but at least 40 percent stocked with commercial species. Eight hundred seedlings or saplings per acre will be considered full stocking.

Poorly stocked and denuded. All commercial forest land not included in any of the above classes.

## Diameters

D.b.h. (diameter at breast height). Stem diameter in inches, outside bark, measured at 4½ feet above the ground.

Diameter class. All trees were tallied by 2-inch diameter classes, each class including diameters 1.0 inch below and 0.9 inch above the stated midpoint; e.g., trees 7.0 to and including 8.9 inches are in the 8-inch class.

## Tree Classification

Sound saw-timber trees. Softwood trees at least 9.0 inches d.b.h. and hardwood trees at least 11.0 inches d.b.h., with not less than one merchantable butt log 12 feet long, or with 50 percent of the gross volume of the tree in sound saw timber.

Sound pole-timber trees. Straight-boled trees between 5.0 inches d.b.h. and saw-timber size that will eventually produce sound saw-timber trees as described above.

Cull trees. Trees that fail to qualify as sound saw timber or pole timber because of poor form, excessive limbiness, rot, or other defect.

## Species Groups

Softwoods. All of the pines, eastern redcedar, Atlantic whitecedar, pondcypress, baldcypress.

Soft hardwoods. Black and water tupelos, sweetgum, soft maple, yellow-poplar, cottonwood, willow, southern magnolia.

Hard hardwoods. All of the oaks and such species as hickory, ash, sycamore, birch, beech, elm.

## Volume Estimates

Board-foot volume. The volume in board feet, measured by the International 1/4-inch log rule, exclusive of defect, of that portion of saw-timber trees between the stump and the upper limit of merchantability for sawlogs.

Volume in cords. The volume in standard cords (including bark) of the sound portion of trees 5.0 inches d.b.h. and larger, between stump and a minimum diameter of 4.0 inches inside bark. Also included is the volume in limbs, in sections 4 feet long and at least 4.0 inches in diameter inside bark, of saw-timber size hardwoods and the sound volume in cull trees.

International 1/4-inch log rule. A rule for estimating the board-foot volume of four-foot log sections according to the formula $V = .905 (0.22D^2 - 0.71D)$. The taper allowance for computing the volume in log lengths greater than four feet is 0.5 inch per four-foot section. Allowance for saw kerf is 1/4 inch.

Standard cord. A stacked pile, 4 x 4 x 8 feet, of round or split bolts, estimated to contain, on the average, 90 cubic feet of softwoods (wood and bark) or 80 cubic feet of hardwoods (wood and bark).

## ACCURACY OF THE SURVEY

In estimating the areas of various categories of land there are two possible sources of error: (1) errors in classifying field plots or in compiling the data, and (2) sampling errors. The first arise from mistakes of judgment or technic and can be minimized by the exercise of care and skill even though it is seldom possible to evaluate them. In the present Forest Survey of South Carolina, every effort is being made to maintain a high order of accuracy in the collection and compilation of data. In the field, this takes the form of frequent checks and a continuing program of training. In the office, the work is organized to permit automatic machine verification of most of the more important operations.

Sampling errors (standard errors of estimate), on the other hand, carry no connotation of faulty work but are theoretical measures of the reliability of estimates based on the variability exhibited by sample measurements. The sampling intensity in the lower coastal plain area of South Carolina was sufficient to provide estimates of forest acreage by counties with standard errors ranging from ±1 to ±7 percent and for the survey unit as a whole of ±1 percent. This standard error of estimate indicates the probabilities are 2 out of 3 that the actual forest area of the unit is within ±1 percent of the value given, provided measurement and computing errors have introduced no bias.

In estimating timber volumes, the possible sources of error include (1) and (2) above and, in addition, (3) inaccurate measurements of tree diameter, height, form, or cull, and (4) bias resulting from improper construction, selection, or use of tree volume tables. As in the case of area determinations, every effort is being made to secure accurate measurements through frequent checks and training. The volume tables used also have been checked and were found to give reasonably accurate figures. The standard error of estimate of the board-foot volume of saw timber in the unit is ±3 percent; the errors of the individual counties range from ±6 to ±11 percent. Corresponding errors of the total volume in cords were not computed, since it seemed reasonable to assume they would be smaller than those for board feet.

Apparently, the statistics of total forest area and total volumes, even for the individual counties, can be considered reliable for general use. A word of caution is appropriate, however, regarding the accuracy of the estimates of the smaller land-use class acreages and of the finer breakdowns of forest areas and volumes. For instance, tests of the area estimates for individual stand-size classes disclose standard errors ranging from 5 to 14 percent in contrast to 1 percent for total forest land. If a further breakdown by forest types is added, another comparable decrease in accuracy occurs. Similar changes in the error of volume estimates accompany breakdowns by stand size and type or by species and tree size.

The reliability of one statistic as compared to another presented in the same or a related table can be judged roughly by its relative magnitude. In general, the larger values warrant greater confidence, while the smallest should probably be considered indicative rather than as absolute quantities. Attempts to make detailed comparisons between individual counties are especially risky. However, several counties may be grouped to produce figures sufficiently accurate for many purposes, and the detailed county tables were prepared with this in mind.

FOREST SURVEY REPORTS PUBLISHED BY SOUTHEASTERN FOREST EXPERIMENT STATION

## Forest Survey Releases

No. 1 -- Forest Resources of the Northern Coastal Plain of South Carolina. 1939

No. 2 -- Forest Resources of the Piedmont Region of South Carolina. 1939

No. 3 -- Forest Resources of the Southern Coastal Plain of South Carolina. 1939

No. 4 -- Forest Resources of the Southern Coastal Plain of North Carolina. 1940

No. 5 -- Forest Resources of the Northern Coastal Plain of North Carolina. 1940

No. 6 -- Forest Resources of the Piedmont Region of North Carolina. 1940

No. 7 -- Forest Resources of the Mountain Region of North Carolina. 1941

No. 8 -- The Distribution of Commercial Forest Trees in North Carolina. 1941

No. 9 -- The Distribution of Commercial Forest Trees in South Carolina. 1941

No. 10 - The Distribution of Commercial Forest Trees in Virginia. 1942

No. 11 - Virginia's Forests. 1942

No. 12 - The Forest Situation in the Coastal Plain of Virginia. 1943

No. 13 - The Forest Situation in Piedmont Virginia. 1943

No. 14 - Preliminary Estimate of 1942 Lumber Production in the Carolinas, Virginia, West Virginia, Kentucky, and Tennessee. 1943

No. 15 - The Forest Situation in the Mountain Region of Virginia. 1943

No. 16 - Wartime Lumber Production in the Appalachian Hardwood Region, January 1942-June 1944. 1944

No. 17 - Wood Waste Available for Conversion to Ethyl Alcohol in the Columbia Area of South Carolina. 1944

No. 18 - North Carolina Forest Growth and Drain, 1937-1943. 1945

No. 19 - Approximate Forest Area and Timber Volume by County in the Carolinas and Virginia. 1945

No. 20 - South Carolina Forest Growth and Drain, 1936-1943. 1945

No. 21 - 1945 Pulpwood Production by County in the Carolinas and Virginia. 1946

No. 22 - Southern Forests as a Source of Pulpwood. 1947

No. 23 - 1946 Pulpwood Production by County in the Southeast. 1947

No. 24 - Southern Pulpwood Production and the Timber Supply. 1948

## USDA Miscellaneous Publications

No.533 - North Carolina Forest Resources and Industries. 1944

No.552 - South Carolina Forest Resources and Industries. 1944