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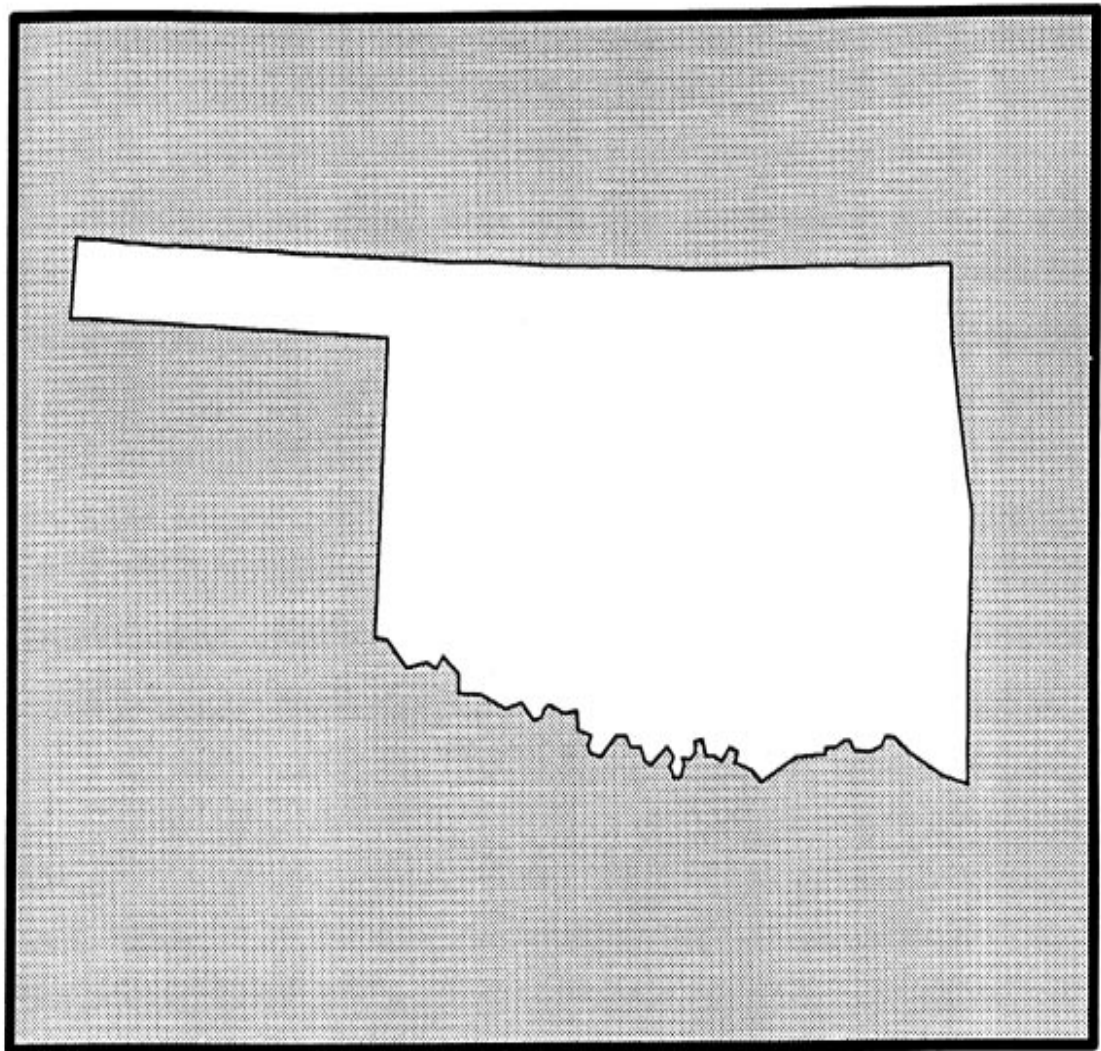
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The Timberland and Woodland Resources of Central and West Oklahoma

James F. Rosson, Jr.



SUMMARY

The first forest survey of 44 central and west Oklahoma counties shows 1,338,100 acres of timberland and 908,700 acres of woodland. Total live-tree volume was 1,476.8 million cubic feet (ft³), 65 percent of which was in timberland. Post oak is the predominant species, making up 20 percent of live-tree volume on timberland and 75 percent of live-tree volume on woodland. There were 2,865 million board feet (fbm) of sawtimber, 76 percent of which was in timberland. Net growth for growing stock was 18.7 and 7.6 million ft³/year for timberland and woodland, respectively.

FOREWORD

The USDA Forest Service, Southern Forest Experiment Station, Midsouth Forest Inventory and Analysis (MIDSO-FIA) unit headquartered at Starkville, Mississippi, conducts forest inventories covering the States of Alabama, Arkansas, Louisiana, Mississippi, Oklahoma, Tennessee, and Texas and the Commonwealth of Puerto Rico. The MIDSO-FIA mission is to develop, analyze, and maintain forest resource information essential for the formulation of forest policies and programs.

The MIDSO-FIA inventories of these States are part of a nationwide effort originally authorized by the McSweeney-McNary Act of 1928. More recent legislation pertinent to the MIDSO-FIA mission includes the Forest and Rangeland Renewable Resources Planning Act of 1974, the National Forest Management Act of 1976, and the Forest and Rangeland Renewable Resource Research Act of 1978.

ACKNOWLEDGMENTS

The MIDSO-FIA unit gratefully acknowledges the cooperation of landowners for providing access to measurement plots. Also, the cooperation of the Oklahoma Division of Forestry (ODF) and the USDA Natural Resource and Conservation Service (NRCS) is greatly acknowledged.

The ODF completed all sample plot measurements; the NRCS cooperated in the verification of sample plot information in this joint effort and assisted in the interpretation of National Resources Inventory (NRI) data.

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INTRODUCTION

The forest survey covering the Midsouth States is administered by the USDA Forest Service, Southern Forest Experiment Station, New Orleans, Louisiana. The Midsouth Forest Inventory and Analysis (MIDSO-FIA) work unit, located in Starkville, Mississippi, is responsible for conducting the Midsouth survey. The following States constitute the Midsouth: Alabama, Arkansas, Louisiana, Mississippi, Oklahoma, Tennessee, and Texas.

The principal findings of the first survey of central and west Oklahoma, conducted during 1988–90, are presented in this report. This information can be used to both quantify and serve as a benchmark that will provide a preliminary review of the forest resources in this area of Oklahoma.

The approach to the survey of central and west Oklahoma was different from routine surveys conducted by MIDSO-FIA. Because of budgetary constraints, the survey of central and west Oklahoma involved a large cooperative effort among MIDSO-FIA, the Oklahoma Division of Forestry (ODF), and the USDA Natural Resource and Conservation Service (NRCS). Personnel from MIDSO-FIA trained ODF foresters to conduct all phases of field work. Using National Resources Inventory (NRI) plot locations in joint cooperation with the NRCS saved the expense of purchasing aerial photography, photointerpretation (dot counts), and the time and expense of laying out a 3- by 3-mile square grid of plots.

To date, six other forest surveys have been completed for the 18 eastern counties. This 18-county area is divided into the Northeast and Southeast forest survey units (fig. 1). Traditionally, surveys have been conducted in these counties because forest lands to the west were considered unproductive in terms of forest products and because the occurrence of forest land also becomes less and less frequent westward. The predominant physiographic area with forest cover in central and west Oklahoma includes the cross timbers region and the central rolling red prairies (fig. 2).

The presentation of supplementary information is offered in the Appendices. Appendix A contains definitions, Appendix B contains a species list, Appendix C contains timberland tables C1 through C19, and Appendix D contains woodland tables D1 through D19.

METHODS

The estimates of forest land area came directly from the 1982 NRI data provided by the NRCS. Sample selection for the Oklahoma NRI was based upon a stratified sampling system consisting of 8,200 primary sample units (PSU's) and PSU points (up to 3) within each PSU for data collection. In the 44 central and west Oklahoma counties, 1,334 PSU points were classed as forest land by the NRCS. (Forest land, as defined by the NRCS in the NRI, is land at least 10-percent stocked by forest trees of any size, or formerly having had such tree cover, and not currently developed for nonforest use.) The minimum area for classification of forest land was 1 acre, which had to be at least 100 ft wide.

Sample plots for this study were randomly selected from the 1,334 PSU points distributed throughout the 44 counties in central and west Oklahoma. Based upon MIDSO-FIA data in the West Gulf region, approximately 200 to 400 sample plots would have to be measured to bring volume sampling errors to an acceptable level (<10 percent). These sample plots were selected by a stratified method among the 44 counties so that all counties would be represented, and counties with large acreage in forest land carried respective weighting. Additional stratification was done by physiographic class to ensure that the forest acreage of uplands and bottomlands would agree with the NRCS estimates. This process resulted in some counties having less than five sample plots per strata because these were the only forested plots in the county identified by the NRCS. Also, some selected plots were no longer classified as forest land at the time of the ODF field visit, so some randomly selected plots had to be excluded. This exclusion left 387 forest plots for this study.

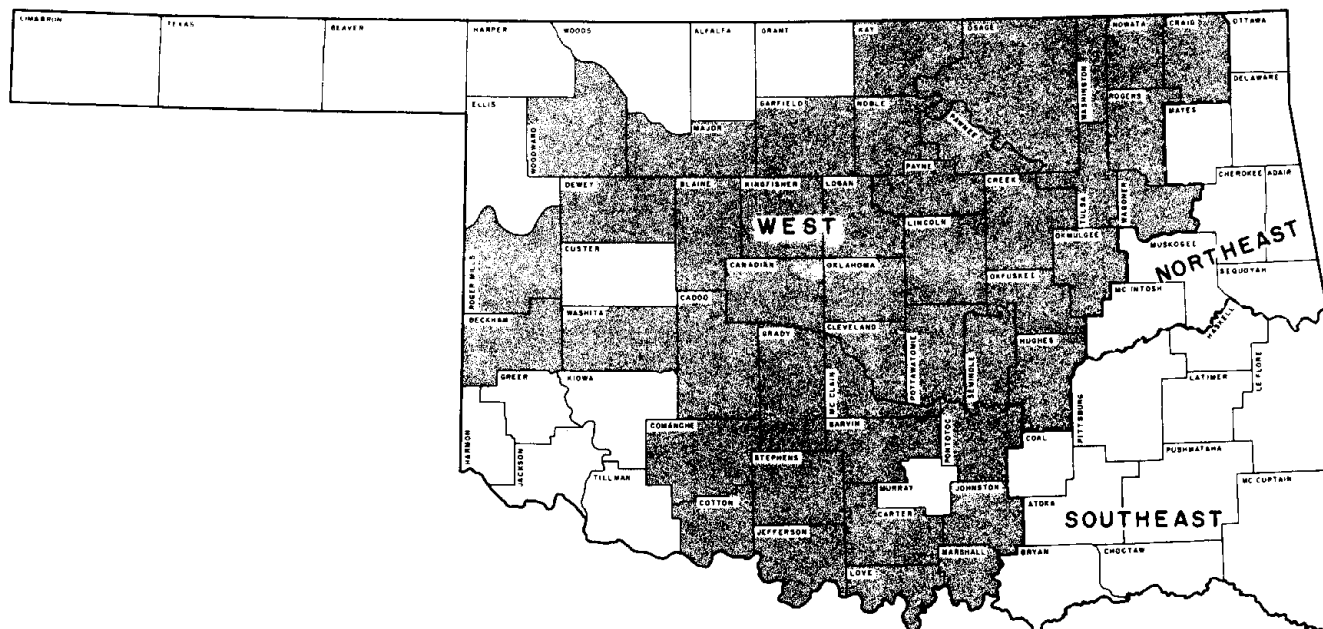


Figure 1.— Counties of central and west Oklahoma where sample plots were measured, 1989, are shown by shaded areas.

Expansion factors for each plot were based upon the original NRCS acreage assignment. The total acreage of forest land for each county was divided by the number of randomly selected plots per respective county to derive the forest area expansion factor for each plot. This method maintained the original weighting for the two selected strata derived by the NRCS.

One departure by MIDSO-FIA from the 1982 NRI was the assignment of productivity classes and the subsequent classification of forest land as timberland or woodland. As mentioned previously, the NRCS identified only forest land; MIDSO-FIA used this forest land base and classified each plot as timberland or woodland. (Woodland is forest land incapable of producing 20 ft³/acre of industrial wood under natural conditions because of adverse site conditions.) To determine whether a plot was woodland or timberland, dominant and codominant trees were screened by age and height and applied to potential yield tables.

Yield classes for normally stocked upland or bottomland stands in the Southern United States were used to determine yield. Yield tables reflecting stand conditions for specific species in central and west Oklahoma were not available; therefore, the estimates of timberland and woodland area (based upon yield) were difficult to define with certainty.

At each randomly selected PSU point, a MIDSO-FIA forest survey plot was installed. Five satellite points, spaced 66 ft apart, were laid out (fig. 3). Trees ≥ 5.0 inches in diameter at breast height (d.b.h.) were selected with a 37.5 basal area factor prism at all five

satellite points; thus, each tree represented 7.5 ft² of basal area. Trees < 5.0 inches in d.b.h. were tallied on a 1/275-acre circular plot established on the first three points of the five-point cluster.

Volumes in central and west Oklahoma were derived from fixed-form regression equations involving diameter squared times bole length. Coefficients were derived from deterministic measurements made on all trees sampled in the Northeast and Southeast survey units during the regular survey conducted in 1986. The deterministic measurements included d.b.h., total tree height, bole length, log length, and four upper-stem diameters.

The 1982 NRI did not sample Federal lands, so these acres of forest land were not reflected in this study. Also, a private ownership breakdown was not done because of the problem with randomly stratifying and weighting each ownership category by county. With only 387 plots, the plot selection process would have been compromised.

Growth measurements and computations were slightly altered from those normally reported by MIDSO-FIA. (For routine MIDSO-FIA methodology, see Van Deusen and others 1986, May 1988.) Because this was a one-time measurement, all sample trees were bored to determine growth for the past 10-year period. Harvested trees were not included in the observations. Also, only mortality trees that had recently died were tallied; trees that died more than 3 to 5 years before this survey was begun were probably missed in the sampling process because measurable evidence

(d.b.h.) was lacking. This lack of data means that growth in this study was based upon survivor growth, nongrowth, ingrowth, ongrowth, and an incomplete mortality estimate (see definitions in appendix A).

Field work began in April 1988 and ended November 1990. A total of 5,115 trees ≥ 1.0 inch in d.b.h. were measured: 2,392 poletimber and sawtimber trees (≥ 5.0 inches in d.b.h.) and 1,288 saplings (≥ 1.0 but < 5.0 inches in d.b.h.) on timberland plots and 909 poletimber and sawtimber trees and 526 saplings on woodland plots.

RESULTS AND DISCUSSION

Timberland

There are 1,338,100 acres of timberland in central and west Oklahoma. Creek and Osage Counties had the most timberland, 129,600 and 122,100 acres, respectively. Of the 59 counties in central and west Oklahoma, 43 had timberland acreage in the survey sample. Exclusion of a county does not mean that a particular county had no woodland or timberland but only that the occurrence of such land was so infrequent that it was missed by one of the three sample points in the PSU sample scheme used by the NRCS.

Three forest types, post oak–blackjack oak, oak–hickory, and sugarberry–American elm–green ash accounted for 74 percent of the timberland area. (See appendix B for scientific and common names of spe-

cies in study.) Stands having > 25 percent of live-tree stocking in conifers occurred infrequently. Most of these types of stands were dominated by eastern red cedar, 60,400 acres. There was a small occurrence of mixed pine and hardwood in one county where short-leaf pine stocking was between 25 and 50 percent of total live-tree stocking, 9,300 acres. The other upland and other bottomland categories were stands dominated by successional species or species that do not readily type into the forest types designated by the Society of American Foresters (SAF). Such species are boxelder, Osage-orange, Kentucky coffeetree, red mulberry, honeylocust, catalpa, winged elm, Siberian elm, and silver maple.

Most of the timberland stands in central and west Oklahoma were poletimber size, occupying 539,600 acres (40 percent). Next were sawtimber-size stands on 424,300 acres, and last were sapling- and seedling-size stands on 374,100 acres. It seems logical that either there has been a fair amount of natural or anthropogenic disturbance in central and west Oklahoma forest lands or there has been a substantial number of land-use conversions. These “hypotheses” are offered as possible explanations for the relatively large amount of acreage in sapling- and seedling-size stands.

Substantial amounts of timberland acreage in central and west Oklahoma were adequately stocked. Only 78,300 acres had less than 60-percent stocking in live trees. However, 784,000 acres were less than 60-percent stocked with growing-stock trees (59 percent of timberland area).

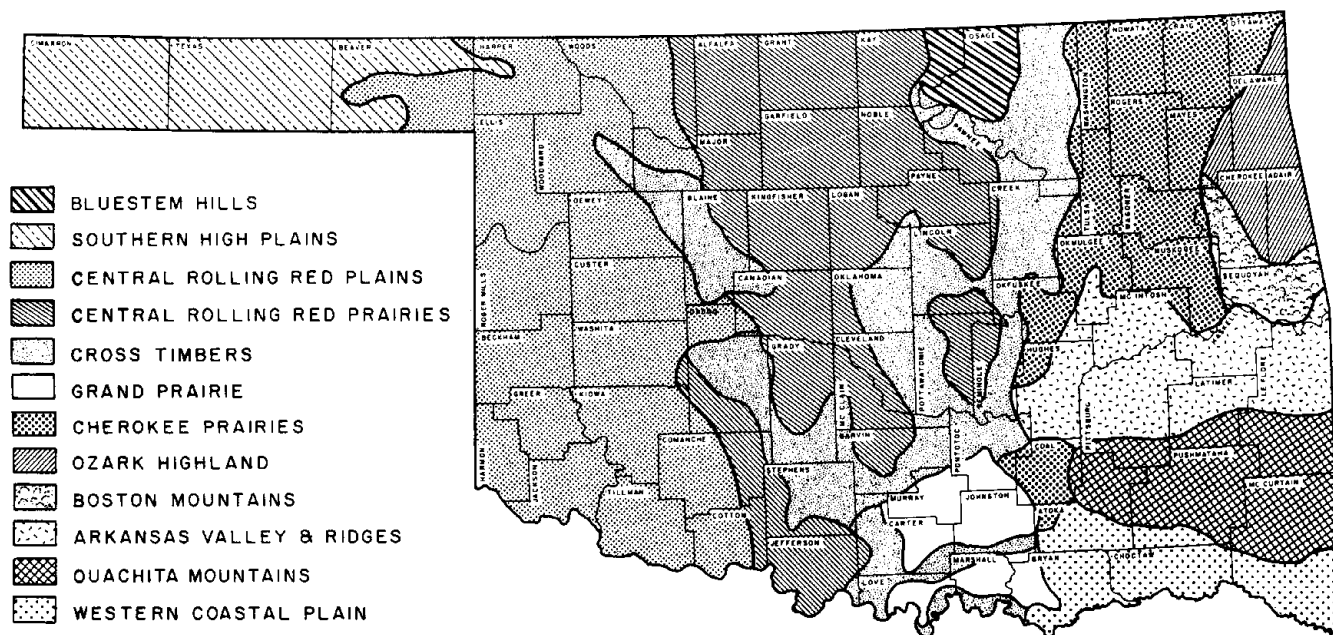


Figure 2.— Various shadings show the physiographic regions of Oklahoma (U.S. Department of Agriculture, Soil Conservation Service, 1984).

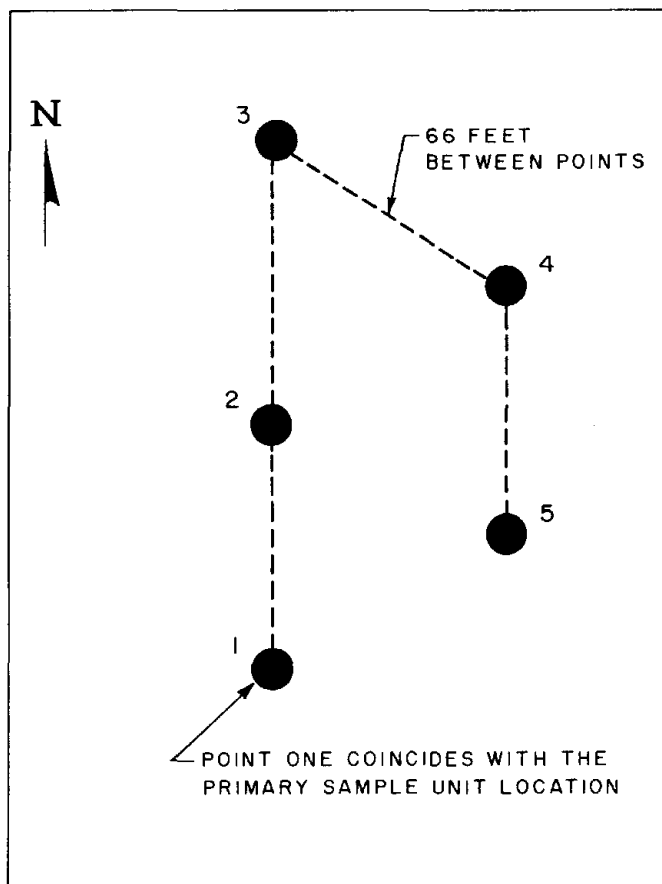


Figure 3.— Sample plot design, showing the five satellite points at a primary sampling unit (PSU) point location, central and west Oklahoma, 1989.

Average basal area for central and west Oklahoma timberland was 74.8 ft²/acre. Again, when cull trees are excluded, only 38.4 ft²/acre was left in growing-stock trees.

Total live-tree volume was 963.4 million ft³, 720.0 ft³/acre. Of this volume, 36 percent was in rough and rotten trees, leaving 617.4 million ft³ in growing stock. Post oak and blackjack oak were the dominant trees (by volume). Post oak made up 20 percent of live-tree volume and blackjack oak, 11 percent; post oak also made up 19 percent of total growing-stock volume. Most of the growing-stock volume in post oak was in the 5.0- to 13.0-inch d.b.h. range (69 percent).

A total of 147.8 million ft³ of growing-stock volume was in trees ≥19.0 inches in d.b.h. (24 percent). Cottonwood, pecan, and bur oak accounted for 44 percent of the volume in this size class.

There were 2,171 million board feet (fbm) of timberland sawtimber in central and west Oklahoma. Three species (cottonwood, post oak, and pecan) made up 39 percent of sawtimber volume. A large portion of sawtimber was in trees ≥19.0 inches in d.b.h. Cotton-

wood, pecan, and bur oak accounted for 47 percent of the sawtimber volume in this size class.

Gross growth and net growth of growing stock in central and west Oklahoma for the 10 years preceding this survey was 19.8 and 18.7 million ft³/year, respectively. Only a small proportion of growth was in softwoods (~5 percent). Most of the growth came from nongrowth (59 percent), followed by survivor growth, ongrowth, and ingrowth (24, 20, and 3 percent, respectively). The estimates of mortality and growth on mortality were only a small portion of the growth in this study (see explanation in the METHODS section).

Gross growth and net growth of sawtimber was 68 and 60 million fbm/year, respectively. Forty-two percent of sawtimber growth came from the nongrowth component and 40 percent from the ingrowth component.

Woodland

There were 908,700 acres of woodland in central and west Oklahoma. Counties that had substantial acreage are Seminole, Hughes, Creek, Osage, and Carter. These five counties made up 43 percent of the woodland acreage in this region of Oklahoma.

Only two forest types, eastern redcedar and post oak-blackjack oak, were represented in the woodland area because of the predominance of post oak, which accounted for 55 percent of total tree density. The post oak-blackjack oak type made up 96 percent of the woodland area in central and west Oklahoma.

Over one-half of the woodland was in poletimber-size stands, 531,100 acres. Also, the stocking and basal area conditions for all live trees were respectable—only 22,500 acres that were less than 60-percent stocked and 286,700 acres that had a basal area of less than 60 ft²/acre. However, growing-stock stocking levels were lower, and subsequent acreage (<60-percent stocked with growing-stock trees) was much higher, 513,300 acres (56 percent of woodland area).

There were 513.4 million ft³ of live-tree volume on woodland in central and west Oklahoma, 565.0 ft³/acre. And 39 percent of the total volume was in cull trees. Post oak had most of the live-tree volume, 385.8 million ft³ (75 percent) and growing-stock volume, 256.5 million ft³ (82 percent).

Of the 694 million fbm of sawtimber, 597 million fbm are in post oak (86 percent). Most of this volume was in the 11.0- to 17.0-inch d.b.h. range.

Gross growth and net growth of growing-stock trees were almost identical due to the low mortality estimate, 7.7 and 7.6 million ft³/year, respectively, for the 10 years preceding this survey; 97 percent of this growth was in hardwoods. Most of the net growth was from nongrowth and ongrowth trees (74 percent).

Gross growth and net growth of sawtimber were 21.6 and 21.2 million fbm/year, respectively. Most of this growth was in the hardwood species group (99 percent).

CONCLUSION

Baseline data describing the forest resources of central and west Oklahoma have been presented. The forest land base for all ownerships exclusive of federally owned land was 2,246,800 acres. Most of this acreage was classed as timberland, 1,338,100 acres (60 percent), with 908,700 acres being classed as woodland (40 percent). Only 379,700 acres were in a bottomland forest type. That leaves 1,867,100 acres in an upland forest type, of which 958,400 acres were timberland and 908,700 acres were woodland.

Total live-tree volume for central and west Oklahoma was 1,476.8 million ft³. Sixty-five percent of the live-tree volume was on timberland. Post oak was the predominant species, accounting for 20 percent of live-tree volume on timberland and 75 percent of live-tree volume on woodland.

Sawtimber volume was 2,865 million fbm for all timberland and woodland. Most of the sawtimber volume was on timberland (76 percent).

Net growth for growing stock was 18.7 and 7.6 million ft³/year for timberland and woodland, respectively. These growth results translate into a net growth of 14.0 ft³/acre/year for timberland and 8.4 ft³/acre/year for woodland. Another study has documented the slow diameter growth rate of post oak in the cross timbers region at 0.127 inch/year (Rosson 1994).

Estimates of forest area and timber volume for central and west Oklahoma have been presented herein. Future surveys of central and west Oklahoma will benefit from more careful scrutiny of the forest land

definition for all counties, from obtaining ownership information, and from improving on the methodology that delineates more clearly between timberland and woodland areas. The latter could prove to be especially difficult because it would require borings from many sample trees, which would necessitate a large ground-sampling effort.

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APPENDICES

Appendix A—Definition of Terms

DEFINITION OF TERMS

Classes of Trees Used in Growth Computations

Ingrowth trees—Submerchantable-and-in 10 years ago and merchantable-and-in at current measurement.

Mortality trees—Merchantable-and-in 10 years ago and dead prior to current measurement.

Nongrowth trees—Merchantable-and-out 10 years ago and merchantable-and-in at current measurement.

Ongrowth trees—Submerchantable-and-out 10 years ago and merchantable-and-in at current measurement.

Survivor trees—Merchantable-and-in 10 years ago and at current measurement.

Dimension Classes of Trees

Poletimber trees—Softwoods 5.0 inches to 8.9 inches in diameter at breast height (d.b.h.) and hardwoods 5.0 to 10.9 inches in d.b.h.

Rough, rotten, and salvable dead trees—See “Tree Classes.”

Saplings—Trees 1.0 inch to 4.9 inches in d.b.h.

Sawtimber trees—Trees 9.0 inches and larger in d.b.h. for softwoods and 11.0 inches and larger for hardwoods.

Seedlings—Trees less than 1.0 inch in d.b.h. and greater than 1 foot tall for hardwoods and greater than 6 inches tall for softwoods.

Forest Land Classes

Forest land—Land at least 10 percent stocked by forest trees of any size, or formerly having such tree cover, and not currently developed for nonforest uses. Minimum area considered for classification is 1 acre. Forest land is divided into timberland and woodland.

Timberland—Forest land that is producing, or is capable of producing, crops of industrial wood and is not withdrawn from timber utilization.

Woodland—Forest land incapable of yielding crops of industrial wood because of adverse site conditions; must produce 20 ft³/acre/year gross growth of growing stock.

Forest Types

Eastern redcedar—Forests in which eastern redcedar comprises a plurality of the stocking.

Shortleaf pine-oak—Forests in which shortleaf pine and upland oaks, singly or in combination, comprise a plurality of the stocking.

Post oak-blackjack oak—Forests in which post oak and blackjack oak, singly or in combination, comprise a plurality of the stocking on upland sites.

Oak-hickory—Forests in which upland oaks and hickories, singly or in combination, comprise a plurality of the stocking on upland sites.

Sugarberry-American elm-green ash—Forests in which sugarberry and American elm, singly or in combination, comprise a plurality of the stocking on bottomland sites. A common associate is green ash.

Sycamore-pecan-American elm—Forests in which American sycamore and pecan, singly or in combination, comprise a plurality of the stocking on bottomland sites. A common associate is American elm.

Growth Classes

Gross growth—Total increase in stand volume computed on growing-stock trees at least 5.0 inches in d.b.h. Gross growth equals survivor growth, plus nongrowth, plus ingrowth, plus ongrowth, plus growth on mortality. Gross growth includes mortality.

Net growth—Increase in stand volume computed on growing-stock trees at least 5.0 inches in d.b.h. Net growth is equal to gross growth minus mortality.

Miscellaneous Definitions

Average annual mortality—Average annual soundwood volume of growing-stock or live trees that died from natural causes for the intersurvey period.

Average net annual growth—Average net annual volume increase of growing-stock or live trees for the intersurvey period.

Basal area—The area in square feet of the cross section at breast height of a single tree or of all the trees in a stand, usually expressed in square feet per acre.

D.b.h. (diameter at breast height)—Tree diameter in inches, outside bark, usually measured at 4.5 feet above ground.

Diameter classes—The 2-inch diameter classes extend from 1.0 inch below to 0.9 inch above the stated midpoint. Thus, the 12-inch class includes trees 11.0 inches through 12.9 inches in d.b.h.

D.o.b. (diameter outside bark)—Stem diameter including bark.

Mortality—Number or sound-wood volume of growing-stock trees or live trees that died from natural causes during a specified period.

Sampling error—Sampling errors for this study are based upon the random sampling formula. Only the subsample of plots (*n*=387) was used to derive the error; the error on the area estimate was not considered in the volume errors.

Sapling-seedling stands—Stands at least 10 percent stocked with live trees, with more than half of this stocking in saplings or seedlings.

Sawlog portion—That portion of the bole of a sawtimber tree between a 1-foot stump and the sawlog top.

Sawlog top—The point on the bole of a sawtimber tree above which a sawlog cannot be produced. The minimum sawlog top is 7.0 inches in d.o.b. for softwoods and 9.0 inches in d.o.b. for hardwoods.

Site class—A classification of forest land in terms of potential capacity to grow crops of industrial wood.

Tree grades—A classification of logs based on external characteristics as indicators of quality or value. Log grade 1 trees contain at least one 8-foot log suitable for veneer. Log grade 2 trees contain at least one 8-foot log suitable for lumber. Note that this is a departure from normal MIDSO-FIA tree-grading procedures.

Stand Size Classes

Poletimber stands—Stands at least 10 percent stocked with live trees, with half or more of this stocking in sawtimber or poletimber trees, and with poletimber stocking exceeding that of sawtimber stocking.

Sawtimber stands—Stands at least 10 percent stocked with live trees, with half or more of this stocking in sawtimber or poletimber trees, and with sawtimber stocking at least equal to poletimber stocking.

Stocking

Stocking is a measure of the extent to which the growth potential of the site is utilized by trees or pre-empted by vegetative cover. Stocking is determined by comparing the stand density in terms of number of trees or basal area with a specified standard. Therefore, full stocking is 100 percent of the stocking standard.

Stocking categories are arbitrarily defined as follows:

Optimally stocked—Stands 61 to 100 percent stocked with growing-stock trees. These stands are growing toward a fully stocked condition (ideal space required for each tree increases with age). Optimum growth and bole form occur in this range.

Overstocked—Stands greater than 100 percent stocked with growing-stock trees. These stands will become stagnant with mortality of individuals increasing as stocking increases over 100 percent.

Understocked—Stands 0 to 60 percent stocked with growing-stock trees. These stands will take a very long time to reach full stocking. Meanwhile, poor bole form will result, and much of the productivity will be placed on heavy limbs instead of on the bole.

The tabulation below shows the density standard in terms of trees per acre by size class required for full stocking.

D.b.h.	Trees per acre	D.b.h.	Trees per acre
-- Inches --	-----	Inches -----	
Seedlings	600	16	72
2	560	18	60
4	460	20	51
6	340	22	42
8	240	24	36
10	155	26	31
12	115	28	27
14	90	30	24

Tree Classes

Commercial species—Tree species currently or potentially suitable for industrial wood products.

Cull trees—Rough or rotten trees.

Growing-stock trees—Living trees of commercial species classified as sawtimber, poletimber, saplings, and seedlings. Trees must contain at least one 8-foot log in the sawlog portion currently or potentially (if too small to qualify) to be classed as growing stock. The log must meet dimension and merchantability standards to qualify. Trees must also have currently or potentially one-half of the gross board-foot volume in sound wood.

Hardwoods—Dicotyledonous trees, usually broad leaved and deciduous.

Live trees—All living trees. Included are all size classes, all tree classes, and both commercial and non-commercial species.

Noncommercial species—Tree species of typically small size, poor form, or inferior quality that normally do not develop into trees suitable for industrial wood products.

Rotten trees—Live trees of commercial species that are unmerchantable for sawlogs currently or potentially because of rot deduction in the sawlog section. (See definition of growing-stock trees.)

Rough trees—Live trees of commercial species that are unmerchantable for sawlogs currently or potentially because of roughness or poor form in the sawlog section. Also included are all live trees of noncommercial species. (See definition of growing-stock trees.)

Salvable dead trees—Standing or downed dead trees that were formerly growing stock and are considered merchantable. Trees must be at least 5.0 inches in d.b.h. to qualify.

Softwoods—Coniferous trees, usually evergreen, having needles or scalelike leaves.

Volume

Volume of cull—The cubic-foot volume of sound wood in rough and rotten trees at least 5.0 inches in d.b.h. from a 1-foot stump to a minimum 4.0-inch top d.o.b. of the central stem or to the point where the central stem breaks into limbs.

Volume of growing stock—The cubic-foot volume of sound wood in growing-stock trees at least 5.0 inches in d.b.h. from a 1-foot stump to a minimum 4.0-inch top d.o.b. of the central stem or to the point where the central stem breaks into limbs.

Volume of live trees—The cubic-foot volume of sound wood in growing-stock, rough, and rotten trees at least 5.0 inches in d.b.h. from a 1-foot stump to a minimum 4.0-inch top d.o.b. of the central stem or to the point where the central stem breaks into limbs.

Volume of sawlog portion of sawtimber trees—The cubic-foot volume of sound wood in the sawlog portion of sawtimber trees. Volume is the net result after deductions for rot, sweep, and other defects that affect use for lumber.

Volume of sawtimber—The board-foot volume (International 1/4-inch Rule) of sound wood in the sawlog portion of sawtimber trees. Volume is the net result after deductions for rot, sweep, and other defects that affect use for lumber.

Volume of timber—The cubic-foot volume of sound wood in growing-stock, rough, rotten, and salvable dead trees at least 5.0 inches in d.b.h. from a 1-foot stump to a minimum 4.0-inch top d.o.b. of the central stem or to the point where the central stem breaks into limbs.

Appendix B—Species List

Species List

Scientific* and common names of tree species ≥ 1.0 inch in d.b.h. occurring in the MIDSO-FIA sample, central and west Oklahoma, 1989:

Scientific name	Common name
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Commercial Species

Softwoods

<i>Juniperus virginiana</i> L.	Eastern redcedar
<i>Pinus echinata</i> Mill.	Shortleaf pine

Hardwoods

<i>Acer negundo</i> L.	Boxelder
<i>A. saccharinum</i> L.	Silver maple
<i>Betula nigra</i>	River birch
<i>Carya</i> spp.	Hickories
<i>C. illinoensis</i> (Wangenh.) K. Koch	Pecan
<i>Catalpa</i> spp.	Catalpa
<i>Celtis laevigata</i> Willd.	Sugarberry
<i>C. occidentalis</i> L.	Hackberry
<i>Cornus florida</i> L.	Flowering dogwood
<i>Diospyros virginiana</i> L.	Common persimmon
<i>Fraxinus americana</i> L.	White ash
<i>F. pennsylvanica</i> Marsh.	Green ash
<i>Gleditsia triacanthos</i> L.	Honeylocust
<i>Gymnocladus dioica</i> (L.) K. Koch	Kentucky coffeetree
<i>Juglans cinerea</i> L.	Butternut
<i>J. nigra</i> L.	Black walnut
<i>Maclura pomifera</i> (Raf.) Scheid.	Osage-orange
<i>Morus rubra</i> L.	Red mulberry
<i>Platanus occidentalis</i> L.	American sycamore

Populus deltoides Bartr.
ex Marsh.

Prunus serotina Ehrh.
Quercus alba L.
Q. falcata Michx.
Q. macrocarpa Michx.
Q. michauxii Nutt.
Q. muehlenbergii Engelm.
Q. palustris Muenchh.
Q. rubra L.
Q. shumardii Buckl.
Q. stellata Wangenh.
Q. velutina Lam.
Robinia pseudoacacia L.
Salix nigra[†] Marsh.
Ulmus alata Michx.
U. americana L.
U. crassifolia Nutt.
U. pumila L.
U. rubra Muhl.

Cottonwood
Black cherry
White oak
Southern red oak
Bur oak
Swamp chestnut oak
Chinkapin oak
Pin oak
Northern red oak
Shumard oak
Post oak
Black oak
Black locust
Black willow
Winged elm
American elm
Cedar elm
Siberian elm
Slippery elm

Noncommercial Species

<i>Bumelia</i> spp.	Chittamwood
<i>Cercis canadensis</i> L.	Eastern redbud
<i>Crataegus</i> spp.	Hawthorn
<i>Melia azedarach</i> L.	Chinaberry
<i>Morus alba</i> L.	White mulberry
<i>Prunus</i> spp. [‡]	Plums, cherries
<i>Quercus marilandica</i> Muenchh.	Blackjack oak
<i>Q. virginiana</i> Mill.	Live oak

*Nomenclature from: Little, E.L., Jr. 1979. Checklist of United States trees (native and naturalized). Agric. Handb. 541. Washington, DC: U.S. Department of Agriculture. 375 p.

[†]May include some noncommercial willows.

[‡]Other than black cherry.

Appendix C—Timberland Tables

Table C1.—Area of timberland by forest type and county, central and west Oklahoma, 1989*

County	All types	Forest type							
		Eastern redcedar	Shortleaf pine-oak	Post oak-blackjack oak	Oak-hickory	Other upland†	Sugarberry-American elm-green ash	Sycamore-Pecan-American elm	Other bottomland†
-----Thousand acres-----									
Beckham	4.8	0.0	0.0	0.0	0.0	0.0	2.4	0.0	2.4
Blaine	15.9	9.5	0.0	3.2	3.2	0.0	0.0	0.0	0.0
Caddo	17.9	0.0	0.0	10.4	0.0	0.0	3.8	0.0	3.8
Canadian	14.5	3.6	0.0	0.0	0.0	3.6	7.3	0.0	0.0
Carter	31.1	10.4	0.0	10.4	10.4	0.0	0.0	0.0	0.0
Cleveland	74.8	0.0	0.0	36.3	14.5	14.5	0.0	0.0	9.4
Commanche	23.4	0.0	0.0	8.3	2.8	0.0	0.0	12.3	0.0
Cotton	2.4	0.0	0.0	0.0	0.0	0.0	2.4	0.0	0.0
Craig	24.9	0.0	0.0	3.7	7.3	3.7	10.3	0.0	0.0
Creek	129.6	0.0	0.0	68.8	45.9	0.0	12.9	2.1	0.0
Dewey	18.6	6.2	0.0	6.2	0.0	6.2	0.0	0.0	0.0
Garfield	6.7	0.0	0.0	4.2	0.0	0.0	0.0	2.5	0.0
Garvin	12.1	0.0	0.0	4.2	0.0	0.0	7.9	0.0	0.0
Grady	12.6	0.0	0.0	7.5	0.0	0.0	5.1	0.0	0.0
Hughes	68.7	0.0	9.3	9.3	18.5	18.5	8.7	4.4	0.0
Jefferson	12.8	0.0	0.0	0.0	0.0	0.0	4.3	8.5	0.0
Johnston	29.2	0.0	0.0	6.7	6.7	13.3	2.6	0.0	0.0
Kay	2.3	0.0	0.0	0.0	0.0	0.0	2.3	0.0	0.0
Kingfisher	10.3	0.0	0.0	0.0	0.0	5.1	0.0	5.2	0.0
Lincoln	54.7	0.0	0.0	8.4	25.1	0.0	21.2	0.0	0.0
Logan	51.6	17.4	0.0	0.0	17.4	8.7	8.0	0.0	0.0
Love	23.2	0.0	0.0	8.7	0.0	8.7	0.0	0.0	5.8
McClain	17.2	0.0	0.0	0.0	7.9	0.0	2.3	2.3	4.7
Major	23.7	4.3	0.0	10.8	4.3	4.3	0.0	0.0	0.0
Marshall	3.8	0.0	0.0	0.0	3.8	0.0	0.0	0.0	0.0
Noble	23.2	0.0	0.0	3.7	0.0	0.0	11.4	8.1	0.0
Nowata	40.7	0.0	0.0	1.2	2.5	2.5	26.8	3.8	3.8
Okfuskee	54.5	0.0	0.0	7.8	23.3	15.5	2.7	5.3	0.0
Oklahoma	54.2	0.0	0.0	19.5	9.7	9.7	12.2	0.0	3.1
Okmulgee	89.2	0.0	0.0	26.8	35.7	8.9	7.6	10.2	0.0
Osage	122.1	8.9	0.0	44.5	44.5	0.0	24.3	0.0	0.0
Pawnee	33.2	0.0	0.0	0.0	20.7	6.9	5.6	0.0	0.0
Payne	32.7	0.0	0.0	0.0	7.2	14.4	11.2	0.0	0.0
Pontotoc	22.2	0.0	0.0	10.6	10.6	0.0	0.9	0.0	0.0
Pottawatomie	16.7	0.0	0.0	6.9	0.0	0.0	4.9	4.9	0.0
Roger Mills	1.4	0.0	0.0	0.0	0.0	0.0	1.4	0.0	0.0
Rogers	22.8	0.0	0.0	0.0	11.5	0.0	11.3	0.0	0.0
Seminole	25.0	0.0	0.0	10.5	0.0	10.5	1.4	1.4	1.4
Stephens	37.1	0.0	0.0	27.2	0.0	0.0	4.9	4.9	0.0
Tulsa	3.9	0.0	0.0	0.0	0.0	0.0	2.0	2.0	0.0
Wagoner	37.5	0.0	0.0	7.4	7.4	7.4	15.4	0.0	0.0
Washington	29.9	0.0	0.0	2.5	7.6	2.5	17.2	0.0	0.0
Washita	4.8	0.0	0.0	0.0	0.0	0.0	4.8	0.0	0.0
All counties	1,338.1	60.4	9.3	375.4	348.4	164.9	267.4	78.0	34.3

*Numbers in rows and columns may not sum to totals due to rounding.

†Stands dominated by successional species that do not readily type into SAF forest types. Examples are: Osage-orange, boxelder, Kentucky coffeetree, red mulberry, honeylocust, catalpa, winged elm, Siberian elm, silver maple, etc.

Table C2.—Area of timberland by stand size class and county, central and west Oklahoma, 1989*

County	All classes	Stand size class (<i>all live trees</i>)		
		Sapling- seedling	Poletimber	Sawtimber
-----Thousand acres-----				
Beckham	4.8	0.0	2.4	2.4
Blaine	15.9	6.4	9.5	0.0
Caddo	17.9	10.4	0.0	7.5
Canadian	14.5	8.5	2.4	3.6
Carter	31.1	20.8	0.0	10.4
Cleveland	74.8	21.8	33.8	19.2
Commanche	23.4	8.3	4.1	11.0
Cotton	2.4	2.4	0.0	0.0
Craig	24.9	3.7	5.2	16.1
Creek	129.6	34.4	86.7	8.6
Dewey	18.6	6.2	12.4	0.0
Garfield	6.7	4.2	0.0	2.5
Garvin	12.1	0.0	4.2	7.9
Grady	12.6	7.5	0.0	5.1
Hughes	68.7	13.6	18.5	36.5
Jefferson	12.8	0.0	4.3	8.5
Johnston	29.2	0.0	20.0	9.3
Kay	2.3	0.0	2.3	0.0
Kingfisher	10.3	5.1	5.2	0.0
Lincoln	54.7	13.7	25.1	15.9
Logan	51.6	17.4	8.7	25.4
Love	23.2	0.0	14.5	8.7
McClain	17.2	0.0	2.3	14.9
Major	23.7	8.6	10.8	4.3
Marshall	3.8	0.0	0.0	3.8
Noble	23.2	4.1	4.5	14.6
Nowata	40.7	0.0	15.2	25.5
Okfuskee	54.5	15.5	33.7	5.3
Oklahoma	54.2	9.7	12.8	31.7
Okmulgee	89.2	16.6	53.6	19.1
Osage	122.1	62.3	26.7	33.2
Pawnee	33.2	0.0	19.4	13.8
Payne	32.7	9.4	7.2	16.1
Pontotoc	22.2	10.6	10.6	0.9
Pottawatomie	16.7	6.9	4.9	4.9
Roger Mills	1.4	1.4	0.0	0.0
Rogers	22.8	11.5	9.0	2.3
Seminole	25.0	0.0	22.3	2.7
Stephens	37.1	11.5	23.1	2.5
Tulsa	3.9	2.0	0.0	2.0
Wagoner	37.5	14.7	13.5	9.2
Washington	29.9	2.5	10.8	16.5
Washita	4.8	2.4	0.0	2.4
All counties	1,338.1	374.1	539.6	424.3

*Numbers in rows and columns may not sum to totals due to rounding.

Table C3.—Area of timberland by stocking class and county, central and west Oklahoma, 1989*

County	All classes	Stocking class (percent) [†]			
		16.7– 59	60– 99	100– 129	≥130
-----Thousand acres-----					
Beckham	4.8	0.0	2.4	2.4	0.0
Blaine	15.9	0.0	3.2	6.4	6.4
Caddo	17.9	3.8	3.8	0.0	10.4
Canadian	14.5	3.6	6.0	2.4	2.4
Carter	31.1	0.0	20.8	10.4	0.0
Cleveland	74.8	0.0	33.8	29.1	12.0
Commanche	23.4	11.0	6.9	5.5	0.0
Cotton	2.4	0.0	2.4	0.0	0.0
Craig	24.9	0.0	8.8	11.0	5.2
Creek	129.6	11.5	43.0	63.8	11.5
Dewey	18.6	2.1	6.2	8.3	2.1
Garfield	6.7	0.0	4.2	0.0	2.5
Garvin	12.1	0.0	7.9	4.2	0.0
Grady	12.6	0.0	0.0	5.1	7.5
Hughes	68.7	0.0	27.8	36.5	4.4
Jefferson	12.8	0.0	8.5	4.3	0.0
Johnston	29.2	0.0	15.9	13.3	0.0
Kay	2.3	0.0	2.3	0.0	0.0
Kingfisher	10.3	0.0	5.1	5.2	0.0
Lincoln	54.7	5.3	30.4	13.7	5.3
Logan	51.6	0.0	0.0	48.9	2.7
Love	23.2	0.0	21.2	1.9	0.0
McClain	17.2	0.0	10.2	4.7	2.3
Major	23.7	4.3	6.5	8.6	4.3
Marshall	3.8	0.0	0.0	3.8	0.0
Noble	23.2	1.6	10.6	7.7	3.3
Nowata	40.7	1.2	17.8	12.7	8.9
Okfuskee	54.5	8.0	23.3	23.3	0.0
Oklahoma	54.2	9.7	3.1	35.3	6.1
Okmulgee	89.2	0.0	40.8	25.5	22.9
Osage	122.1	8.9	51.0	35.6	26.7
Pawnee	33.2	0.0	20.7	12.5	0.0
Payne	32.7	0.0	16.1	9.4	7.2
Pontotoc	22.2	0.0	0.9	10.6	10.6
Pottawatomie	16.7	4.9	4.9	6.9	0.0
Roger Mills	1.4	0.0	1.4	0.0	0.0
Rogers	22.8	0.0	4.5	4.5	13.8
Seminole	25.0	0.0	25.0	0.0	0.0
Stephens	37.1	2.5	11.5	11.5	11.5
Tulsa	3.9	0.0	0.0	2.0	2.0
Wagoner	37.5	0.0	0.0	24.0	13.5
Washington	29.9	0.0	16.2	11.1	2.5
Washita	4.8	0.0	2.4	2.4	0.0
All counties	1,338.1	78.3	527.4	524.4	207.9

*Numbers in rows and columns may not sum to totals due to rounding.

[†]All live trees.

Table C4.—Area of timberland by basal area class and county, central and west Oklahoma, 1989*

County	Basal area class (ft^2/acre) [†]					
	All classes	<30	30–59	60–89	90–119	≥120
-----Thousand acres-----						
Beckham	4.8	0.0	0.0	2.4	2.4	0.0
Blaine	15.9	0.0	0.0	6.4	9.5	0.0
Caddo	17.9	0.0	17.9	0.0	0.0	0.0
Canadian	14.5	2.4	12.1	0.0	0.0	0.0
Carter	31.1	0.0	10.4	20.8	0.0	0.0
Cleveland	74.8	0.0	7.3	33.8	21.8	12.0
Commanche	23.4	2.8	16.5	4.1	0.0	0.0
Cotton	2.4	0.0	2.4	0.0	0.0	0.0
Craig	24.9	0.0	7.3	8.8	3.7	5.2
Creek	129.6	11.5	48.0	63.8	6.4	0.0
Dewey	18.6	4.1	2.1	10.3	0.0	2.1
Garfield	6.7	0.0	4.2	0.0	0.0	2.5
Garvin	12.1	0.0	0.0	0.0	12.1	0.0
Grady	12.6	0.0	7.5	0.0	0.0	5.1
Hughes	68.7	9.3	0.0	40.9	18.5	0.0
Jefferson	12.8	0.0	0.0	8.5	4.3	0.0
Johnston	29.2	0.0	2.6	13.3	13.3	0.0
Kay	2.3	0.0	0.0	2.3	0.0	0.0
Kingfisher	10.3	0.0	5.1	0.0	5.2	0.0
Lincoln	54.7	8.4	19.0	8.4	5.3	13.7
Logan	51.6	0.0	17.4	8.7	11.4	14.1
Love	23.2	0.0	0.0	10.6	12.5	0.0
McClain	17.2	0.0	7.9	2.3	4.7	2.3
Major	23.7	4.3	4.3	6.5	4.3	4.3
Marshall	3.8	0.0	0.0	0.0	3.8	0.0
Noble	23.2	0.0	7.7	5.7	4.9	4.9
Nowata	40.7	0.0	6.3	12.7	16.6	5.1
Okfuskee	54.5	0.0	13.1	33.7	7.8	0.0
Oklahoma	54.2	9.7	9.7	12.8	12.8	9.2
Okmulgee	89.2	14.0	14.0	29.3	26.8	5.1
Osage	122.1	26.7	17.8	35.6	42.1	0.0
Pawnee	33.2	0.0	6.9	16.6	9.7	0.0
Payne	32.7	0.0	7.2	11.7	6.7	7.2
Pontotoc	22.2	0.0	0.0	11.5	10.6	0.0
Pottawatomie	16.7	0.0	11.8	4.9	0.0	0.0
Roger Mills	1.4	1.4	0.0	0.0	0.0	0.0
Rogers	22.8	0.0	2.3	13.8	4.5	2.3
Seminole	25.0	0.0	1.4	23.7	0.0	0.0
Stephens	37.1	0.0	4.9	29.6	2.5	0.0
Tulsa	3.9	2.0	0.0	2.0	0.0	0.0
Wagoner	37.5	7.4	0.0	17.8	6.2	6.2
Washington	29.9	0.0	0.0	15.9	8.3	5.7
Washita	4.8	0.0	2.4	2.4	0.0	0.0
All counties	1,338.1	103.9	297.5	531.4	298.6	106.7

*Numbers in rows and columns may not sum to totals due to rounding.

† All live trees.

Table C5.—Area of timberland by stand size class and forest type, central and west Oklahoma, 1989*

Forest type	Stand size class (all live trees)				
	All classes	Nonstocked	Sapling-seedling	Poletimber	Sawtimber
-----Thousand acres-----					
Eastern redcedar	60.4	0.0	34.3	13.7	12.3
Shortleaf pine-oak	9.3	0.0	0.0	0.0	9.3
Post oak-blackjack oak	375.4	0.0	160.7	195.9	18.7
Oak-hickory	348.4	0.0	107.4	172.1	68.9
Other upland†	164.9	0.0	35.0	54.5	75.4
Sugarberry-American elm-green ash	267.4	0.0	25.6	63.6	178.3
Sycamore-pecan-American elm	78.0	0.0	11.1	25.4	41.5
Other bottomland†	34.3	0.0	0.0	14.3	19.9
All types	1,338.1	0.0	374.1	539.6	424.3

*Numbers in rows and columns may not sum to totals due to rounding.

†Stands dominated by successional species that do not readily type into SAF forest types. Examples are: Osage-orange, boxelder, Kentucky coffeetree, red mulberry, honeylocust, catalpa, winged elm, Siberian elm, silver maple.

Table C6.—Area of timberland by basal area class and forest type, central and west Oklahoma, 1989*

Forest type	All classes	Basal area class (ft^2/acre) [†]				
		<30	30–59	60–89	90–119	≥120
-----Thousand acres-----						
Eastern redcedar	60.4	0.0	12.3	33.0	15.1	0.0
Shortleaf pine-oak	9.3	0.0	0.0	0.0	9.3	0.0
Post oak-blackjack oak	375.4	42.3	116.5	165.8	46.6	4.2
Oak hickory	348.4	32.4	78.1	157.7	61.2	19.0
Other upland [‡]	164.9	18.4	15.7	62.2	47.8	15.9
Sugarberry-American elm-green ash	267.4	8.3	40.3	69.1	100.5	49.2
Sycamore-pecan-American elm	78.0	2.5	27.0	25.9	11.9	10.6
Other bottomland [‡]	34.3	0.0	7.6	12.7	6.2	7.8
All types	1,338.1	103.9	297.5	531.4	298.6	106.7

*Numbers in rows and columns may not sum to totals due to rounding.

†All live trees.

†Stands dominated by successional species that do not readily type into SAF forest types. Examples are: Osage-orange, boxelder, Kentucky coffeetree, red mulberry, honeylocust, catalpa, winged elm, Siberian elm, silver maple.

Table C7.—Area of timberland by percentage of growing-stock trees and cull trees, central and west Oklahoma, 1989*

Growing-stock trees	Total	Cull trees percent stocking						
		0-10	10-20	20-30	30-40	40-50	50-60	60+
Percent stocking		-----Thousand acres-----						
0-10	182.3	0.0	2.1	0.0	11.0	16.4	4.9	147.9
10-20	109.7	0.0	0.0	0.0	0.0	0.0	20.4	89.3
20-30	158.2	0.0	0.0	5.3	12.2	2.1	15.8	122.8
30-40	149.4	0.0	0.0	5.7	6.2	3.8	26.8	107.0
40-50	102.3	1.2	2.7	5.2	0.0	18.3	29.5	45.4
50-60	82.1	16.8	3.7	5.6	16.3	18.6	13.6	7.6
60-70	104.6	7.1	12.6	12.2	23.4	19.2	2.5	27.4
70-80	123.4	28.6	22.8	11.5	24.5	32.2	3.8	0.0
80-90	93.4	38.9	17.6	12.6	9.3	3.1	12.0	0.0
90-100	97.2	59.1	25.0	0.0	5.8	0.0	7.2	0.0
100-110	40.5	24.8	9.8	2.7	0.0	0.0	3.2	0.0
110-120	31.1	6.6	6.8	17.8	0.0	0.0	0.0	0.0
120-130	29.7	12.0	13.3	1.2	3.2	0.0	0.0	0.0
130-140	12.5	12.5	0.0	0.0	0.0	0.0	0.0	0.0
140-150	21.7	21.7	0.0	0.0	0.0	0.0	0.0	0.0
150-160	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
160+	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total	1,338.1	229.4	116.3	79.7	111.9	113.7	139.6	547.4

*Numbers in rows and columns may not sum to totals due to rounding.

Table C8.—Average basal area of live trees on timberland by tree class, species group, and tree size class, central and west Oklahoma, 1989*

Tree classes	All species	Softwood			Hardwood		
		Sapling-seedling	Poletimber	Sawtimber	Sapling-seedling	Poletimber	Sawtimber
		-----Square feet per acre-----					
Growing stock	38.4	0.7	0.6	1.0	4.7	14.1	17.3
Rough and rotten	36.4	0.1	0.2	0.1	8.7	16.4	11.0
Total	74.8	0.8	0.7	1.0	13.5	30.5	28.2

*Numbers in rows and columns may not sum to totals due to rounding.

Table C9.—Number of live trees by diameter class and species on timberland, central and west Oklahoma, 1989*

Species	All classes	Diameter class (2-inch)									
		1.0- 2.9	3.0- 4.9	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
-----Thousand trees-----											
Eastern redcedar	33,903	20,791	8,028	2,055	1,639	941	181	166	62	9	31
Shortleaf pine	381	0	0	0	0	0	187	139	55	0	0
Boxelder	4,660	1,282	1,198	622	485	163	372	269	223	11	34
Silver maple	1,940	847	847	157	0	38	0	30	22	0	0
River birch	1,095	711	0	0	141	244	0	0	0	0	0
Chittamwood, gum bumelia	5,587	1,839	1,899	1,163	137	240	68	206	0	34	0
Hickory spp.	41,470	20,180	10,085	5,257	3,925	1,124	735	44	75	30	13
Pecan	17,052	7,355	3,803	1,732	1,438	485	823	397	425	213	381
Catalpa	641	0	0	365	56	35	136	0	0	48	0
Sugarberry	14,524	5,685	3,028	2,113	1,547	908	366	275	153	207	242
Hackberry	23,013	11,480	6,638	1,440	1,226	734	666	296	103	193	239
Eastern redbud	11,688	8,525	3,088	0	75	0	0	0	0	0	0
Flowering dogwood	1,506	1,506	0	0	0	0	0	0	0	0	0
Hawthorn	466	466	0	0	0	0	0	0	0	0	0
Common persimmon	7,101	4,718	1,468	364	520	0	20	0	12	0	0
White ash	4,470	3,680	0	441	217	92	0	15	0	0	24
Green ash	8,860	3,160	263	1,386	1,492	1,079	633	217	292	117	220
Honeylocust	1,650	406	578	275	251	58	13	0	51	0	17
Kentucky coffeetree	2,507	2,088	0	151	65	44	68	66	0	10	16
Butternut	133	0	0	100	0	0	0	0	16	0	17
Black walnut	5,992	1,855	849	1,370	637	481	206	220	98	109	167
Osage-orange	9,195	897	3,525	3,672	666	284	65	37	24	4	19
Chinaberry	381	0	0	169	147	35	30	0	0	0	0
White mulberry	1,123	449	0	660	0	14	0	0	0	0	0
Red mulberry	5,308	3,778	730	249	271	96	26	93	0	58	8
American sycamore	2,968	596	1,644	141	70	197	105	0	47	71	97
Cottonwood	3,829	0	976	1,012	670	346	111	61	80	75	498
Plums and cherries	6,160	5,913	207	40	0	0	0	0	0	0	0
White oak	371	282	0	0	0	0	0	47	0	0	41
Southern red oak	761	0	697	0	0	50	0	0	0	0	14
Bur oak	1,663	705	0	181	143	91	33	102	99	39	269
Blackjack oak	151,355	62,964	50,616	15,374	12,491	6,486	2,400	680	116	161	68
Chinkapin oak	3,397	0	232	1,288	544	794	221	82	115	11	110
Pin oak	1,998	1,133	233	243	59	0	39	145	36	38	74
Northern red oak	2,580	1,234	0	0	430	176	327	74	185	68	85
Shumard oak	14,642	5,390	5,781	870	703	521	581	351	200	82	162
Post oak	122,846	50,507	35,747	15,072	8,982	5,803	3,215	1,319	1,006	542	652
Black oak	3,124	125	447	1,125	693	281	238	65	41	87	22
Black locust	1,171	1,160	0	0	0	0	0	11	0	0	0
Willow	6,703	2,129	2,929	91	633	480	207	83	110	10	30
Winged elm	33,280	19,701	5,311	5,342	1,967	608	322	0	0	13	16
American elm	25,937	9,844	6,536	3,774	2,272	1,320	396	772	457	252	313
Cedar elm	142	0	0	0	0	142	0	0	0	0	0
Siberian elm	2,913	1,097	799	595	366	0	0	0	47	7	0
Slippery elm	9,387	3,107	3,588	1,112	781	407	158	18	27	156	31
Others	22,768	14,590	5,441	1,691	632	371	28	15	0	0	0
All species	622,638	282,174	167,213	71,693	46,371	25,168	12,978	6,296	4,178	2,655	3,911

*Numbers in rows and columns may not sum to totals due to rounding.

Table C10.—Number of growing-stock trees by diameter class and species on timberland, central and west Oklahoma, 1989*

Species	All classes	Diameter class (2-inch)									
		1.0- 2.9	3.0- 4.9	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
-----Thousand trees-----											
Eastern redcedar	30,986	19,153	7,542	1,515	1,386	941	181	166	62	9	31
Shortleaf pine	325	0	0	0	0	0	187	139	0	0	0
Boxelder	1,408	496	263	99	234	23	159	92	30	11	0
Silver maple	89	0	0	0	0	38	0	30	22	0	0
River birch	1,095	711	0	0	141	244	0	0	0	0	0
Hickory spp.	22,608	7,924	7,683	3,727	1,952	828	387	44	19	30	13
Pecan	13,508	6,506	2,358	1,495	825	450	705	377	344	168	281
Catalpa	75	0	0	0	0	0	28	0	0	48	0
Sugarberry	8,944	3,046	1,317	1,309	1,547	810	210	245	119	197	145
Hackberry	14,612	7,366	3,199	1,288	920	589	572	259	87	172	160
Common persimmon	2,654	1,336	801	139	347	0	20	0	12	0	0
White ash	3,399	3,021	0	99	217	28	0	15	0	0	18
Green ash	8,350	3,160	263	1,273	1,429	901	586	192	255	117	176
Honeylocust	878	179	351	119	102	58	0	0	51	0	17
Kentucky coffeetree	2,077	1,658	0	151	65	44	68	66	0	10	16
Butternut	133	0	0	100	0	0	0	0	16	0	17
Black walnut	4,785	1,504	849	937	587	350	206	146	72	47	88
Osage-orange	7,120	179	3,525	2,882	387	100	0	18	12	0	17
Red mulberry	427	0	220	0	71	64	0	17	0	47	8
American sycamore	2,693	596	1,400	141	70	186	86	0	47	71	97
Cottonwood	1,911	0	0	201	629	285	111	61	69	75	479
Southern red oak	399	0	348	0	0	50	0	0	0	0	0
Bur oak	1,327	472	0	181	143	55	33	102	80	21	238
Chinkapin oak	1,750	0	232	312	366	444	196	37	63	11	88
Pin oak	1,673	899	233	243	59	0	39	64	36	38	62
Northern red oak	1,538	282	0	0	430	176	327	74	163	19	66
Shumard oak	13,264	4,978	5,554	449	703	381	540	327	200	11	119
Post oak	59,379	17,884	19,924	8,874	5,287	4,052	1,747	576	565	241	230
Black oak	2,933	125	447	1,125	518	281	238	65	41	87	6
Black locust	431	431	0	0	0	0	0	0	0	0	0
Willow	2,842	213	1,953	91	184	136	89	83	71	10	11
Winged elm	12,875	6,042	2,215	3,058	657	565	322	0	0	0	16
American elm	10,632	2,474	3,398	1,412	1,498	921	71	391	164	129	174
Cedar elm	142	0	0	0	0	142	0	0	0	0	0
Siberian elm	1,764	799	799	166	0	0	0	0	0	0	0
Slippery elm	2,234	452	513	494	145	271	134	18	27	156	23
All species	241,260	91,886	65,389	31,880	20,900	13,412	7,239	3,607	2,628	1,724	2,594

*Numbers in rows and columns may not sum to totals due to rounding.

Table C11.—*Volume of timber on timberland by species and class of timber, central and west Oklahoma, 1989**

Species†	All live	Tree class	
		Growing stock	Rough and rotten
----- Million cubic feet -----			
Post oak	194.5	114.4	79.8
Blackjack oak	109.1	0.0	109.1
Pecan	74.1	59.4	14.7
American elm	54.4	30.3	24.1
Cottonwood	51.9	47.9	4.0
Green ash	44.3	40.4	3.9
Hickory spp.	42.9	29.7	13.2
Hackberry	42.6	37.3	5.3
Sugarberry	35.9	30.4	5.5
Shumard oak	35.1	30.1	5.0
Black walnut	31.1	24.0	7.1
Eastern redcedar	22.7	21.2	1.5
Winged elm	22.4	14.5	7.9
Bur oak	20.7	18.9	1.8
Northern red oak	19.4	16.3	3.2
Chinkapin oak	18.1	12.7	5.4
Slippery elm	15.5	10.5	5.0
Boxelder	14.9	5.5	9.4
Black oak	13.7	12.4	1.3
Osage-orange	13.6	9.4	4.1
Willow	13.3	7.1	6.1
American sycamore	13.2	13.1	0.1
Pin oak	10.4	8.7	1.7
Unlisted trees	7.3	0.0	7.3
Chittamwood, gum bumelia	6.4	0.0	6.4
Shortleaf pine	5.9	4.7	1.2
Kentucky coffeetree	3.7	3.7	0.0
Red mulberry	3.4	2.1	1.2
White ash	3.2	2.3	0.9
Honeylocust	3.0	2.2	0.8
Catalpa	2.6	1.3	1.3
Siberian elm	2.4	0.4	2.1
Common persimmon	2.4	2.0	0.3
White oak	1.9	0.0	1.9
Silver maple	1.7	1.4	0.3
Chinaberry	1.4	0.0	1.4
River birch	1.2	1.2	0.0
Butternut	0.9	0.9	0.0
Southern red oak	0.8	0.4	0.3
White mulberry	0.7	0.0	0.7
Cedar elm	0.6	0.6	0.0
Black locust	0.2	0.0	0.2
Eastern redbud	0.1	0.0	0.1
Plums and cherries	0.1	0.0	0.1
All species	963.4	617.4	345.9

*Numbers in rows and columns may not sum to totals due to rounding.

[†]Ranked by live volume.

Table C12.—Volume of live trees by diameter class and species on timberland, central and west Oklahoma, 1989*

Species	All classes	Diameter class (2-inch)							
		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
-----Million cubic feet-----									
Eastern redcedar	22.7	3.3	6.0	5.9	1.6	2.8	1.6	0.5	1.2
Shortleaf pine	5.9	0.0	0.0	0.0	2.5	2.1	1.2	0.0	0.0
Boxelder	14.9	1.1	1.7	0.6	3.9	2.8	3.5	0.4	1.1
Silver maple	1.7	0.3	0.0	0.3	0.0	0.5	0.6	0.0	0.0
River birch	1.2	0.0	0.4	0.9	0.0	0.0	0.0	0.0	0.0
Chittamwood, gum bumelia	6.4	2.4	0.1	0.8	0.4	2.4	0.0	0.4	0.0
Hickory spp.	42.9	12.1	13.3	5.9	7.4	0.9	1.6	1.0	0.6
Pecan	74.1	3.4	6.0	4.3	10.1	7.2	10.8	6.8	25.4
Catalpa	2.6	0.2	0.1	0.1	1.1	0.0	0.0	1.1	0.0
Sugarberry	35.9	3.1	5.1	4.7	3.8	4.3	2.8	3.8	8.2
Hackberry	42.6	2.8	4.1	4.8	6.5	4.0	2.5	6.8	11.3
Eastern redbud	0.1	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0
Common persimmon	2.4	0.7	1.1	0.0	0.3	0.0	0.3	0.0	0.0
White ash	3.2	0.5	1.3	0.6	0.0	0.2	0.0	0.0	0.7
Green ash	44.3	2.5	5.0	7.3	6.7	3.7	5.6	3.3	10.1
Honeylocust	3.0	0.5	0.8	0.2	0.1	0.0	0.7	0.0	0.7
Kentucky coffeetree	3.7	0.4	0.2	0.3	0.5	0.9	0.0	0.3	1.0
Butternut	0.9	0.1	0.0	0.0	0.0	0.0	0.2	0.0	0.7
Black walnut	31.1	3.6	3.0	3.7	3.1	3.7	2.2	3.5	8.2
Osage-orange	13.6	8.4	2.0	1.3	0.3	0.2	0.3	0.1	0.9
Chinaberry	1.4	0.4	0.5	0.2	0.3	0.0	0.0	0.0	0.0
White mulberry	0.7	0.7	0.0	0.1	0.0	0.0	0.0	0.0	0.0
Red mulberry	3.4	0.2	0.7	0.6	0.1	0.6	0.0	0.9	0.3
American sycamore	13.2	0.2	0.4	1.5	0.3	0.0	0.7	1.8	8.2
Cottonwood	51.9	1.6	4.0	3.4	1.6	1.1	1.9	1.9	36.4
Plums and cherries	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0
White oak	1.9	0.0	0.0	0.0	0.0	0.6	0.0	0.0	1.3
Southern red oak	0.8	0.0	0.0	0.4	0.0	0.0	0.0	0.0	0.3
Bur oak	20.7	0.4	0.3	0.5	0.4	1.5	1.9	1.2	14.6
Blackjack oak	109.1	22.2	32.0	26.3	15.3	6.5	1.9	3.2	1.7
Chinkapin oak	18.1	1.4	1.8	4.0	2.0	1.4	2.2	0.3	5.0
Pin oak	10.4	0.4	0.4	0.0	0.5	2.3	1.3	1.4	4.2
Northern red oak	19.4	0.0	1.7	1.1	4.0	1.3	4.4	1.9	5.0
Shumard oak	35.1	1.7	2.8	2.8	5.3	6.0	3.8	1.7	11.0
Post oak	194.3	26.3	31.2	35.5	27.7	19.2	17.0	10.5	26.8
Black oak	13.7	1.9	2.0	1.6	2.1	1.3	1.0	2.3	1.4
Black locust	0.2	0.0	0.0	0.0	0.0	0.2	0.0	0.0	0.0
Willow	13.3	0.3	2.6	3.1	2.2	1.4	2.6	0.2	0.9
Winged elm	22.4	9.5	5.7	3.5	3.0	0.0	0.0	0.1	0.6
American elm	54.4	7.6	7.3	7.2	3.1	7.7	5.8	4.9	10.9
Cedar elm	0.6	0.0	0.0	0.6	0.0	0.0	0.0	0.0	0.0
Siberian elm	2.4	1.3	0.9	0.0	0.0	0.0	0.1	0.1	0.0
Slippery elm	15.5	2.4	2.3	2.5	1.7	0.3	0.5	3.6	2.2
Others	7.3	3.4	1.8	1.9	0.1	0.1	0.0	0.0	0.0
All species	963.4	127.3	148.7	138.4	117.8	87.2	79.2	63.9	200.9

*Numbers in rows and columns may not sum to totals due to rounding.

Table C13.—Volume of growing stock by diameter class and species on timberland, central and west Oklahoma, 1989*

Species	All classes	Diameter class (2-inch)							
		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
----- Million cubic feet -----									
Eastern redcedar	21.2	2.5	5.3	5.9	1.6	2.8	1.6	0.5	1.2
Shortleaf pine	4.7	0.0	0.0	0.0	2.5	2.1	0.0	0.0	0.0
Boxelder	5.5	0.3	1.0	0.1	1.9	1.3	0.5	0.4	0.0
Silver maple	1.4	0.0	0.0	0.3	0.0	0.5	0.6	0.0	0.0
River birch	1.2	0.0	0.4	0.9	0.0	0.0	0.0	0.0	0.0
Hickory spp.	29.7	9.1	7.8	5.3	4.7	0.9	0.3	1.0	0.6
Pecan	59.4	3.1	3.7	4.1	8.6	6.9	9.6	5.7	17.7
Catalpa	1.3	0.0	0.0	0.0	0.2	0.0	0.0	1.1	0.0
Sugarberry	30.4	2.1	5.1	4.1	2.2	4.0	2.4	3.6	6.9
Hackberry	37.3	2.5	3.3	4.3	5.8	3.8	2.2	6.6	8.9
Common persimmon	2.0	0.5	1.0	0.0	0.3	0.0	0.3	0.0	0.0
White ash	2.3	0.2	1.3	0.1	0.0	0.2	0.0	0.0	0.6
Green ash	40.4	2.2	4.9	6.6	6.4	3.4	5.1	3.3	8.5
Honeylocust	2.2	0.2	0.3	0.2	0.0	0.0	0.7	0.0	0.7
Kentucky coffeetree	3.7	0.4	0.2	0.3	0.5	0.9	0.0	0.3	1.0
Butternut	0.9	0.1	0.0	0.0	0.0	0.0	0.2	0.0	0.7
Black walnut	24.0	3.2	3.0	3.0	3.1	2.5	1.7	2.0	5.4
Osage-orange	9.4	6.7	1.1	0.5	0.0	0.1	0.2	0.0	0.9
Red mulberry	2.1	0.0	0.3	0.5	0.0	0.2	0.0	0.9	0.3
American sycamore	13.1	0.2	0.4	1.5	0.3	0.0	0.7	1.8	8.2
Cottonwood	47.9	0.7	3.8	3.0	1.6	1.1	1.7	1.9	34.1
Southern red oak	0.4	0.0	0.0	0.4	0.0	0.0	0.0	0.0	0.0
Bur oak	18.9	0.4	0.3	0.4	0.4	1.5	1.6	0.8	13.6
Chinkapin oak	12.7	0.4	1.4	2.6	1.9	0.6	1.6	0.3	3.9
Pin oak	8.7	0.4	0.4	0.0	0.5	1.1	1.3	1.4	3.7
Northern red oak	16.3	0.0	1.7	1.1	4.0	1.3	4.0	0.6	3.6
Shumard oak	30.1	0.7	2.8	2.2	5.1	5.6	3.8	0.4	9.5
Post oak	114.4	17.7	18.7	26.5	16.4	9.7	10.6	6.1	8.7
Black oak	12.4	1.9	1.7	1.6	2.1	1.3	1.0	2.3	0.4
Willow	7.1	0.3	0.7	1.2	1.3	1.4	1.7	0.2	0.4
Winged elm	14.5	5.6	2.3	2.9	3.0	0.0	0.0	0.0	0.6
American elm	30.3	3.4	4.9	5.3	0.8	4.0	2.2	3.2	6.5
Cedar elm	0.6	0.0	0.0	0.6	0.0	0.0	0.0	0.0	0.0
Siberian elm	0.4	0.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Slippery elm	10.5	1.1	0.5	1.9	1.3	0.3	0.5	3.6	1.4
All species	617.4	66.3	78.3	87.3	76.2	57.5	56.1	48.0	147.8

*Numbers in rows and columns may not sum to totals due to rounding.

Table C14.—Volume of sawtimber by diameter class and species on timberland, central and west Oklahoma, 1989*

Species	All classes	Diameter class (2-inch)					
		9.0- 10.9	11.0- 12.9	13.0- 14.9	15.0- 16.9	17.0- 18.9	≥19.0
-----Million board feet [†] -----							
Eastern redcedar	55.7	20.2	6.2	12.7	8.1	2.3	6.3
Shortleaf pine	22.3	0.0	11.3	11.0	0.0	0.0	0.0
Boxelder	19.0	0.0	6.8	7.0	3.2	2.0	0.0
Silver maple	5.1	0.0	0.0	2.2	2.9	0.0	0.0
Hickory spp.	34.1	0.0	18.3	4.4	2.3	5.1	4.0
Pecan	267.1	0.0	37.4	33.6	51.1	31.5	113.6
Catalpa	7.8	0.0	0.7	0.0	0.0	7.1	0.0
Sugarberry	103.5	0.0	9.8	18.0	12.2	19.3	44.3
Hackberry	137.4	0.0	21.4	18.0	11.9	33.7	52.3
Common persimmon	2.6	0.0	1.1	0.0	1.5	0.0	0.0
White ash	5.8	0.0	0.0	0.8	0.0	0.0	5.0
Green ash	131.2	0.0	24.8	15.7	26.0	17.5	47.2
Honeylocust	8.6	0.0	0.0	0.0	4.4	0.0	4.2
Kentucky coffeetree	14.5	0.0	2.2	5.4	0.0	1.6	5.3
Butternut	5.6	0.0	0.0	0.0	1.3	0.0	4.3
Black walnut	79.3	0.0	12.4	12.6	8.7	10.2	35.4
Osage-orange	7.0	0.0	0.0	1.0	1.2	0.0	4.9
Red mulberry	6.9	0.0	0.0	0.7	0.0	4.5	1.6
American sycamore	72.5	0.0	1.1	0.0	3.8	9.8	57.9
Cottonwood	292.8	0.0	6.2	6.0	10.5	14.9	255.3
Bur oak	114.7	0.0	1.6	7.5	9.2	4.2	92.2
Chinkapin oak	46.1	0.0	7.9	3.0	8.2	1.6	25.4
Pin oak	42.2	0.0	1.8	5.1	6.8	7.6	21.0
Northern red oak	71.7	0.0	17.6	5.8	22.0	3.9	22.3
Shumard oak	125.7	0.0	21.9	26.3	19.3	2.3	55.9
Post oak	276.5	0.0	76.9	50.2	61.4	34.1	53.9
Black oak	38.2	0.0	12.4	6.2	5.9	11.7	2.1
Willow	24.6	0.0	5.3	6.2	9.3	1.2	2.6
Winged elm	14.8	0.0	10.4	0.0	0.0	0.0	4.3
American elm	99.6	0.0	3.4	19.8	13.2	18.6	44.5
Slippery elm	37.9	0.0	5.1	1.1	3.0	20.6	8.0
All species	2,170.9	20.2	324.1	280.1	307.3	265.5	973.8

*Numbers in rows and columns may not sum to totals due to rounding.

[†]International 1/4-inch Rule.

Table C15.—Volume of timber by class of timber and forest type on timberland, central and west Oklahoma, 1989*

Forest type	All classes	Class of timber			
		Growing-stock poletimber	Growing-stock sawtimber	Rough poletimber and sawtimber	Rotten poletimber and sawtimber
----- <i>Million cubic feet</i> -----					
Eastern redcedar	31.8	7.3	12.7	10.7	1.1
Shortleaf pine-oak	10.6	1.6	4.7	3.7	0.6
Post oak-blackjack oak	161.5	31.6	24.5	103.0	2.4
Oak-hickory	206.6	62.7	56.7	77.3	9.8
Other upland†	145.4	42.1	68.7	31.6	3.1
Sugarberry-American elm-green ash	303.5	60.3	171.1	60.9	11.2
Sycamore-pecan- American elm	66.8	12.9	35.6	15.8	2.4
Other bottomland†	37.2	7.5	17.4	12.1	0.2
All types	963.4	226.0	391.4	315.2	30.8

*Numbers in rows and columns may not sum to totals due to rounding.

[†]Stand dominated by successional species that do not readily type into SAF forest types. Examples are: Osage-orange, boxelder, Kentucky coffeetree, red mulberry, honeylocust, catalpa, winged elm, Siberian elm, silver maple, etc.

Table C16.—*Volume of timber by tree grade and species on timberland, central and west Oklahoma, 1989**

Species	All grades	Tree grade [†]	
		No. 1	No. 2
----- Million board feet [‡] -----			
Eastern redcedar	55.7	55.7	0.0
Shortleaf pine	22.3	0.0	22.3
Boxelder	19.0	0.0	19.0
Silver maple	5.1	0.0	5.1
Hickory spp.	34.1	8.4	25.6
Pecan	267.1	71.3	195.8
Catalpa	7.8	0.0	7.8
Sugarberry	103.5	10.7	92.8
Hackberry	137.4	2.9	134.5
Common persimmon	2.6	1.5	1.1
White ash	5.8	0.0	5.8
Green ash	131.2	4.2	127.1
Honeylocust	8.6	0.0	8.6
Kentucky coffeetree	14.5	0.0	14.5
Butternut	5.6	1.8	3.8
Black walnut	79.3	5.3	74.0
Osage-orange	7.0	2.1	5.0
Red mulberry	6.9	0.0	6.9
American sycamore	72.5	0.0	72.5
Cottonwood	292.8	97.7	195.0
Bur oak	114.7	15.5	99.2
Chinkapin oak	46.1	0.0	46.1
Pin oak	42.2	0.0	42.2
Northern red oak	71.7	2.0	69.7
Shumard oak	125.7	4.5	121.3
Post oak	276.5	22.7	253.8
Black oak	38.2	3.5	34.7
Willow	24.6	4.2	20.4
Winged elm	14.8	0.0	14.8
American elm	99.6	14.5	85.0
Slippery elm	37.9	0.0	37.9
All species	2,170.9	328.6	1,842.3

*Numbers in rows and columns may not sum to totals due to rounding.

[†]See appendix A for definition.

[‡]International 1/4-inch Rule.

Table C17.—*Components of average annual growth* and average annual mortality* of growing stock on timberland by species group, central and west Oklahoma, 1989[†]*

Species group	Gross growth [†]	Net growth [‡]	Component					Mortality
			Survivor growth	Nongrowth	Ingrowth	Ongrowth	Growth on mortality	
			----- Million cubic feet -----					
Softwood	1.0	0.9	0.2	0.7	0.0	0.1	0.0	0.1
Hardwood	18.8	17.9	4.3	10.3	0.5	3.6	0.2	1.0
All species	19.8	18.7	4.4	11.0	0.5	3.7	0.2	1.1

*Based on previous 10 years growth.

[†]Numbers in rows and columns may not sum to totals due to rounding.

[‡]Gross growth = survivor growth + nongrowth + ingrowth + ongrowth + growth on mortality.

[§]Net growth = survivor growth + nongrowth + ingrowth + ongrowth + growth on mortality - mortality.

Table C18.—Components of average annual growth* and average annual mortality* of sawtimber on timberland by species group, central and west Oklahoma, 1989[†]

Species group	Gross growth [†]	Net growth [‡]	Component					Mortality
			Survivor growth	Nongrowth	Ingrowth	Ongrowth	Growth on mortality	
			----- Million board feet [¶] -----					
Softwood	4.1	4.0	0.7	1.9	1.3	0.1	0.1	0.1
Hardwood	64.1	56.0	12.5	23.2	22.8	4.7	0.9	8.1
All species	68.1	59.9	13.2	25.2	24.1	4.7	0.9	8.2

*Based on previous 10 years growth.

[†]Numbers in rows and columns may not sum to totals due to rounding.

[‡]Gross growth = survivor growth + nongrowth + ingrowth + ongrowth + growth on mortality.

[§]Net growth = survivor growth + nongrowth + ingrowth + ongrowth + growth on mortality - mortality.

[¶]International 1/4-inch Rule.

Table C19.—Sampling errors for growing-stock volume, growing-stock growth, and sawtimber volume by county for timberland, central and west Oklahoma, 1989*

County	Growing-stock volume	Growing-stock growth	Sawtimber volume
----- Percent -----			
Beckham	†	47.0	†
Blaine	29.0	34.6	†
Caddo	†	†	†
Canadian	43.0	42.3	†
Carter	†	†	†
Cleveland	33.8	37.3	44.2
Comanche	48.4	†	†
Cotton	0.0	0.0	0.0
Craig	34.9	45.3	42.1
Creek	19.4	26.4	17.7
Dewey	34.7	†	36.6
Garfield	†	29.8	†
Garvin	†	42.9	†
Grady	†	†	†
Hughes	27.8	34.7	30.5
Jefferson	15.4	†	34.8
Johnston	29.7	38.1	†
Kay	0.0	0.0	0.0
Kingfisher	†	†	†
Lincoln	21.8	34.5	45.4
Logan	41.2	†	47.5
Love	35.5	†	†
McClain	22.2	28.8	17.4
Major	38.7	46.0	42.8
Marshall	0.0	0.0	0.0
Noble	33.8	43.2	38.9
Nowata	18.6	18.2	24.9
Okfuskee	23.2	42.2	16.8
Oklahoma	34.1	40.3	34.3
Okmulgee	27.4	32.2	30.8
Osage	†	†	†
Pawnee	28.1	40.7	40.7
Payne	24.6	50.0	35.9
Pontotoc	†	49.8	†
Pottawatomie	†	†	†
Roger Mills	0.0	0.0	0.0
Rogers	18.8	32.4	30.5
Seminole	42.4	†	32.3
Stephens	†	†	†
Tulsa	†	†	†
Wagoner	29.5	42.0	29.4
Washington	19.4	19.8	28.0
Washita	35.3	†	†
All counties	7.6	8.9	9.9

*See definition of sampling error in appendix A.

[†]Sampling error greater than 50 percent.

Appendix D—Woodland Tables

Table D1.—Area of woodland by forest type and county, central and west Oklahoma, 1989*

County	Forest type								
	All types	Eastern redcedar	Shortleaf pine-oak	Post oak-blackjack oak	Oak-hickory	Other upland†	Sugarberry-American elm-green ash	Sycamore-Pecan-American elm	Other bottomland†
-----Thousand acres-----									
Caddo	31.3	0.0	0.0	31.3	0.0	0.0	0.0	0.0	0.0
Canadian	7.2	3.6	0.0	3.6	0.0	0.0	0.0	0.0	0.0
Carter	62.3	0.0	0.0	62.3	0.0	0.0	0.0	0.0	0.0
Commanche	13.8	0.0	0.0	13.8	0.0	0.0	0.0	0.0	0.0
Craig	3.7	0.0	0.0	3.7	0.0	0.0	0.0	0.0	0.0
Creek	80.3	0.0	0.0	80.3	0.0	0.0	0.0	0.0	0.0
Dewey	2.1	2.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Garfield	4.2	0.0	0.0	4.2	0.0	0.0	0.0	0.0	0.0
Grady	7.5	0.0	0.0	7.5	0.0	0.0	0.0	0.0	0.0
Hughes	83.3	9.3	0.0	74.1	0.0	0.0	0.0	0.0	0.0
Jefferson	13.0	0.0	0.0	13.0	0.0	0.0	0.0	0.0	0.0
Johnston	26.6	6.7	0.0	20.0	0.0	0.0	0.0	0.0	0.0
Kingfisher	2.6	0.0	0.0	2.6	0.0	0.0	0.0	0.0	0.0
Lincoln	41.9	0.0	0.0	41.9	0.0	0.0	0.0	0.0	0.0
Logan	8.7	0.0	0.0	8.7	0.0	0.0	0.0	0.0	0.0
Love	34.7	0.0	0.0	34.7	0.0	0.0	0.0	0.0	0.0
Major	15.1	10.8	0.0	4.3	0.0	0.0	0.0	0.0	0.0
Marshall	3.8	0.0	0.0	3.8	0.0	0.0	0.0	0.0	0.0
Noble	2.4	0.0	0.0	2.4	0.0	0.0	0.0	0.0	0.0
Nowata	3.7	0.0	0.0	3.7	0.0	0.0	0.0	0.0	0.0
Okfuskee	31.0	0.0	0.0	31.0	0.0	0.0	0.0	0.0	0.0
Oklahoma	29.2	0.0	0.0	29.2	0.0	0.0	0.0	0.0	0.0
Okmulgee	17.9	0.0	0.0	17.9	0.0	0.0	0.0	0.0	0.0
Osage	71.2	0.0	0.0	71.2	0.0	0.0	0.0	0.0	0.0
Pawnee	13.8	0.0	0.0	13.8	0.0	0.0	0.0	0.0	0.0
Payne	21.5	0.0	0.0	21.5	0.0	0.0	0.0	0.0	0.0
Pontotoc	42.6	0.0	0.0	42.6	0.0	0.0	0.0	0.0	0.0
Pottawatomie	20.7	0.0	0.0	20.7	0.0	0.0	0.0	0.0	0.0
Rogers	34.5	0.0	0.0	34.5	0.0	0.0	0.0	0.0	0.0
Seminole	94.2	0.0	0.0	94.2	0.0	0.0	0.0	0.0	0.0
Stephens	45.3	0.0	0.0	45.3	0.0	0.0	0.0	0.0	0.0
Tulsa	34.6	0.0	0.0	34.6	0.0	0.0	0.0	0.0	0.0
Washington	2.5	0.0	0.0	2.5	0.0	0.0	0.0	0.0	0.0
Woodward	1.6	1.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0
All counties	908.7	33.9	0.0	874.8	0.0	0.0	0.0	0.0	0.0

*Numbers in rows and columns may not sum to totals due to rounding.

†Stands dominated by successional species that do not readily type into SAF forest types. Examples are: Osage-orange, boxelder, Kentucky coffeetree, red mulberry, honeylocust, catalpa, winged wlm, Siberian elm, silver maple, etc.

Table D2.—Area of woodland by stand size class and county, central and west Oklahoma, 1989*

County	All classes	Stand size class		
		Sapling- seedling	Poletimber	Sawtimber
		-----Thousand acres-----		
Caddo	31.3	20.9	0.0	10.4
Canadian	7.2	3.6	0.0	3.6
Carter	62.3	10.4	51.9	0.0
Commanche	13.8	2.8	8.3	2.8
Craig	3.7	0.0	3.7	0.0
Creek	80.3	11.5	68.8	0.0
Dewey	2.1	0.0	2.1	0.0
Garfield	4.2	4.2	0.0	0.0
Grady	7.5	7.5	0.0	0.0
Hughes	83.3	27.8	37.0	18.5
Jefferson	13.0	0.0	8.7	4.3
Johnston	26.6	13.3	13.3	0.0
Kingfisher	2.6	0.0	2.6	0.0
Lincoln	41.9	33.5	8.4	0.0
Logan	8.7	0.0	8.7	0.0
Love	34.7	0.0	17.4	17.4
Major	15.1	10.8	4.3	0.0
Marshall	3.8	0.0	3.8	0.0
Noble	2.4	0.0	2.4	0.0
Nowata	3.7	0.0	3.7	0.0
Okfuskee	31.0	0.0	23.3	7.8
Oklahoma	29.2	9.7	19.5	0.0
Okmulgee	17.9	0.0	17.9	0.0
Osage	71.2	17.8	35.6	17.8
Pawnee	13.8	0.0	13.8	0.0
Payne	21.5	0.0	21.5	0.0
Pontotoc	42.6	10.6	10.6	21.3
Pottawatomie	20.7	6.9	13.8	0.0
Rogers	34.5	0.0	34.5	0.0
Seminole	94.2	0.0	31.4	62.8
Stephens	45.3	9.1	27.2	9.1
Tulsa	34.6	0.0	34.6	0.0
Washington	2.5	0.0	2.5	0.0
Woodward	1.6	1.6	0.0	0.0
All counties	908.7	201.9	531.1	175.7

*Numbers in rows and columns may not sum to totals due to rounding.

Table D3.—Area of woodland by stocking class and county, central and west Oklahoma, 1989*

County	All classes	Stocking class (percent) [†]			
		16.7– 59	60– 99	100– 129	≥130
-----Thousand acres-----					
Caddo	31.3	10.4	10.4	10.4	0.0
Canadian	7.2	0.0	7.2	0.0	0.0
Carter	62.3	0.0	20.8	41.5	0.0
Commanche	13.8	0.0	8.3	5.5	0.0
Craig	3.7	0.0	0.0	3.7	0.0
Creek	80.3	0.0	57.3	22.9	0.0
Dewey	2.1	0.0	2.1	0.0	0.0
Garfield	4.2	0.0	0.0	4.2	0.0
Grady	7.5	0.0	0.0	7.5	0.0
Hughes	83.3	0.0	64.8	9.3	9.3
Jefferson	13.0	4.3	4.3	4.3	0.0
Johnston	26.6	0.0	20.0	0.0	6.7
Kingfisher	2.6	0.0	0.0	2.6	0.0
Lincoln	41.9	0.0	0.0	25.1	16.8
Logan	8.7	0.0	0.0	8.7	0.0
Love	34.7	0.0	8.7	26.0	0.0
Major	15.1	0.0	6.5	4.3	4.3
Marshall	3.8	0.0	3.8	0.0	0.0
Noble	2.4	0.0	2.4	0.0	0.0
Nowata	3.7	0.0	0.0	2.5	1.2
Okfuskee	31.0	7.8	23.3	0.0	0.0
Oklahoma	29.2	0.0	0.0	19.5	9.7
Okmulgee	17.9	0.0	0.0	17.9	0.0
Osage	71.2	0.0	44.5	26.7	0.0
Pawnee	13.8	0.0	6.9	6.9	0.0
Payne	21.5	0.0	0.0	21.5	0.0
Pontotoc	42.6	0.0	21.3	21.3	0.0
Pottawatomie	20.7	0.0	13.8	0.0	6.9
Rogers	34.5	0.0	34.5	0.0	0.0
Seminole	94.2	0.0	73.2	20.9	0.0
Stephens	45.3	0.0	9.1	36.2	0.0
Tulsa	34.6	0.0	34.6	0.0	0.0
Washington	2.5	0.0	0.0	2.5	0.0
Woodward	1.6	0.0	0.0	1.6	0.0
All counties	908.7	22.5	477.7	353.6	54.8

*Numbers in rows and columns may not sum to totals due to rounding.

[†]All live trees.

Table D4.—Area of woodland by basal area class and county, central and west Oklahoma, 1989*

County	Basal area class (ft ² /acre) [†]					
	All classes	<30	30–59	60–89	90–119	≥120
-----Thousand acres-----						
Caddo	31.3	0.0	31.3	0.0	0.0	0.0
Canadian	7.2	3.6	0.0	3.6	0.0	0.0
Carter	62.3	0.0	20.8	10.4	20.8	10.4
Commanche	13.8	0.0	2.8	8.3	2.8	0.0
Craig	3.7	0.0	0.0	0.0	3.7	0.0
Creek	80.3	0.0	34.4	45.9	0.0	0.0
Dewey	2.1	0.0	0.0	2.1	0.0	0.0
Garfield	4.2	0.0	4.2	0.0	0.0	0.0
Grady	7.5	0.0	7.5	0.0	0.0	0.0
Hughes	83.3	18.5	9.3	46.3	9.3	0.0
Jefferson	13.0	0.0	4.3	0.0	8.7	0.0
Johnston	26.6	13.3	6.7	6.7	0.0	0.0
Kingfisher	2.6	0.0	0.0	0.0	2.6	0.0
Lincoln	41.9	0.0	25.1	16.8	0.0	0.0
Logan	8.7	0.0	0.0	0.0	8.7	0.0
Love	34.7	0.0	0.0	26.0	8.7	0.0
Major	15.1	4.3	2.2	6.5	2.2	0.0
Marshall	3.8	0.0	0.0	0.0	3.8	0.0
Noble	2.4	0.0	1.2	0.0	0.0	1.2
Nowata	3.7	0.0	0.0	0.0	2.5	1.2
Okfuskee	31.0	0.0	15.5	15.5	0.0	0.0
Oklahoma	29.2	0.0	9.7	0.0	9.7	9.7
Okmulgee	17.9	0.0	0.0	17.9	0.0	0.0
Osage	71.2	8.9	26.7	26.7	8.9	0.0
Pawnee	13.8	0.0	0.0	6.9	6.9	0.0
Payne	21.5	0.0	0.0	14.4	7.2	0.0
Pontotoc	42.6	0.0	10.6	21.3	10.6	0.0
Pottawatomie	20.7	0.0	6.9	13.8	0.0	0.0
Rogers	34.5	0.0	0.0	11.5	23.0	0.0
Seminole	94.2	0.0	0.0	94.2	0.0	0.0
Stephens	45.3	0.0	0.0	27.2	9.1	9.1
Tulsa	34.6	0.0	17.3	17.3	0.0	0.0
Washington	2.5	0.0	0.0	0.0	2.5	0.0
Woodward	1.6	1.6	0.0	0.0	0.0	0.0
All counties	908.7	50.2	236.5	439.0	151.4	31.6

*Numbers in rows and columns may not sum to totals due to rounding.

[†]All live trees.

Table D5.—Area of woodland by stand size class and forest type, central and west Oklahoma, 1989*

Forest type	Stand size class (all live trees)				
	All classes	Nonstocked	Sapling-seedling	Poletimber	Sawtimber
-----Thousand acres-----					
Eastern redcedar	33.9	0.0	27.6	6.4	0.0
Post oak-blackjack oak	874.8	0.0	174.3	524.8	175.7
All types	908.7	0.0	201.9	531.1	175.7

*Numbers in rows and columns may not sum to totals due to rounding.

Table D6.—Area of woodland by basal area class and forest type, central and west Oklahoma, 1989*

		Basal area class (ft^2/acre) [†]				
Forest type	All classes	<30	30–59	60–89	90–119	≥120
-----Thousand acres-----						
Eastern redcedar	33.9	21.1	2.2	8.5	2.2	0.0
Post oak-blackjack oak	874.8	29.1	234.3	430.4	149.3	31.6
All types	908.7	50.2	236.5	439.0	151.4	31.6

*Numbers in rows and columns may not sum to totals due to rounding.

†All live trees.

Table D7.—Area of woodland by percentage of growing-stock trees and cull trees, central and west Oklahoma, 1989*

Growing-stock trees	Total	Cull trees percent stocking						
		0-10	10-20	20-30	30-40	40-50	50-60	60+
Percent stocking		-----Thousand acres-----						
0-10	93.6	0.0	0.0	0.0	0.0	4.3	0.0	89.3
10-20	86.8	0.0	0.0	0.0	0.0	0.0	0.0	86.8
20-30	69.3	0.0	0.0	0.0	0.0	17.3	10.4	41.5
30-40	114.1	7.8	10.4	2.8	28.8	18.5	18.0	27.9
40-50	49.2	0.0	0.0	7.8	0.0	15.8	8.7	16.9
50-60	100.3	0.0	18.2	27.6	9.3	25.1	9.7	10.5
60-70	117.0	26.6	9.3	11.5	8.9	30.2	22.2	8.4
70-80	88.6	20.9	6.7	0.0	11.7	29.0	10.5	9.7
80-90	89.3	56.0	11.5	3.7	7.2	2.6	8.4	0.0
90-100	53.1	23.7	19.8	0.0	2.8	0.0	6.9	0.0
100-110	24.3	23.1	0.0	1.2	0.0	0.0	0.0	0.0
110-120	13.9	12.7	0.0	1.2	0.0	0.0	0.0	0.0
120-130	9.3	0.0	9.3	0.0	0.0	0.0	0.0	0.0
130-140	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
140-150	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
150-160	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
160+	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total	908.7	170.6	85.0	55.8	68.6	142.8	94.8	291.1

*Numbers in rows and columns may not sum to totals due to rounding.

Table D8.—Average basal area of live trees on woodland by tree class, species group, and tree size class, central and west Oklahoma, 1989*

Tree classes	All species	Softwood			Hardwood		
		Sapling-seedling	Poletimber	Sawtimber	Sapling-seedling	Poletimber	Sawtimber
----- <i>Square feet per acre</i> -----							
Growing stock	37.1	0.6	0.2	0.3	5.2	19.4	11.4
Rough and rotten	32.6	0.2	0.1	0.0	6.9	16.0	9.5
Total	69.8	0.8	0.3	0.3	12.1	35.4	20.9

*Numbers in rows and columns may not sum to totals due to rounding.

Table D9.—Number of live trees by diameter class and species on woodland, central and west Oklahoma, 1989*

Species	All classes	Diameter class (2-inch)									
		1.0- 2.9	3.0- 4.9	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
		-----Thousand trees-----									
Eastern redcedar	22,590	16,592	4,642	833	223	131	24	145	0	0	0
Chittamwood, gum bumelia	4,592	0	3,513	489	258	236	96	0	0	0	0
Hickory spp.	21,706	15,220	1,662	2,280	1,620	649	92	155	0	0	28
Pecan	300	0	0	246	0	0	0	0	54	0	0
Sugarberry	5,124	4,298	795	0	31	0	0	0	0	0	0
Hackberry	7,621	4,803	2,475	238	0	105	0	0	0	0	0
Eastern redbud	2,933	2,041	892	0	0	0	0	0	0	0	0
Common persimmon	2,102	1,051	1,051	0	0	0	0	0	0	0	0
White ash	756	0	0	604	152	0	0	0	0	0	0
Green ash	4,062	633	1,687	622	586	290	196	0	49	0	0
Black walnut	5	0	0	0	0	0	0	0	0	0	5
Osage-orange	1,184	1,184	0	0	0	0	0	0	0	0	0
White mulberry	976	976	0	0	0	0	0	0	0	0	0
Red mulberry	22	0	0	0	0	0	0	0	0	0	22
Black cherry	3,172	3,172	0	0	0	0	0	0	0	0	0
Bur oak	849	849	0	0	0	0	0	0	0	0	0
Blackjack oak	47,461	16,535	16,726	5,951	5,753	1,726	501	173	12	55	29
Swamp chestnut oak	292	0	0	292	0	0	0	0	0	0	0
Chinkapin oak	846	0	0	327	519	0	0	0	0	0	0
Northern red oak	262	0	0	0	172	0	90	0	0	0	0
Shumard oak	6,281	4,227	0	0	944	997	0	109	0	5	0
Post oak	225,939	83,994	48,372	42,211	24,243	12,580	6,553	4,860	1,478	912	737
Black oak	15,613	6,266	5,182	736	985	1,685	344	216	35	44	120
Live oak	106	0	0	0	0	0	106	0	0	0	0
Willow	139	0	0	0	0	0	139	0	0	0	0
Winged elm	19,078	14,420	2,993	844	556	0	264	0	0	0	0
American elm	6,188	5,102	1,051	0	0	0	0	0	0	0	36
Slippery elm	5,333	4,679	232	0	256	166	0	0	0	0	0
Others	8,318	5,750	1,929	301	0	172	105	61	0	0	0
All species	413,850	191,791	93,202	55,973	36,298	18,738	8,510	5,719	1,627	1,016	976

*Numbers in rows and columns may not sum to totals due to rounding.

Table D10.—Number of growing-stock trees by diameter class and species on woodland, central and west Oklahoma, 1989*

Species	All classes	Diameter class (2-inch)									
		1.0- 2.9	3.0- 4.9	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
----- Thousand trees -----											
Eastern redcedar	15,085	9,308	4,642	613	223	131	24	145	0	0	0
Hickory spp.	15,887	10,895	1,051	1,843	1,323	592	0	155	0	0	28
Pecan	54	0	0	0	0	0	0	0	54	0	0
Sugarberry	228	197	0	0	31	0	0	0	0	0	0
Hackberry	4,584	2,819	1,765	0	0	0	0	0	0	0	0
Green ash	3,429	0	1,687	622	586	290	196	0	49	0	0
Osage-orange	1,184	1,184	0	0	0	0	0	0	0	0	0
Bur oak	849	849	0	0	0	0	0	0	0	0	0
Swamp chestnut oak	292	0	0	292	0	0	0	0	0	0	0
Chinkapin oak	846	0	0	327	519	0	0	0	0	0	0
Northern red oak	172	0	0	0	172	0	0	0	0	0	0
Shumard oak	1,317	1,054	0	0	241	16	0	0	0	5	0
Post oak	118,430	30,209	28,594	27,514	16,787	6,575	4,241	2,722	969	490	330
Black oak	13,664	6,266	4,414	427	575	1,519	344	84	0	0	35
Willow	65	0	0	0	0	0	65	0	0	0	0
Winged elm	8,202	5,893	976	844	266	0	222	0	0	0	0
Slippery elm	3,651	2,587	1,051	0	0	0	0	0	0	0	13
Others	3,532	2,878	232	0	256	166	0	0	0	0	0
All species	191,469	74,139	44,413	32,481	20,978	9,289	5,091	3,106	1,071	495	406

*Numbers in rows and columns may not sum to totals due to rounding.

Table D11.—*Volume of timber on woodland by species and class of timber, central and west Oklahoma, 1989**

Species†	All live	Tree class	
		Growing stock	Rough and rotten
----- Million cubic feet† -----			
Post oak	385.8	256.5	129.3
Blackjack oak	39.5	0.0	39.5
Black oak	27.2	15.5	11.7
Hickory spp.	15.4	13.9	1.5
Green ash	8.4	8.4	0.0
Shumard oak	6.6	1.5	5.1
Winged elm	5.8	4.9	0.9
Eastern redcedar	3.9	3.7	0.2
Chittamwood gum bumelia	2.9	0.0	2.9
Pecan	2.5	2.0	0.5
Unlisted trees	2.4	0.0	2.4
Chinkapin oak	1.9	1.9	0.0
American elm	1.7	1.1	0.6
Northern red oak	1.6	0.7	0.9
Slippery elm	1.6	1.6	0.0
White ash	1.6	0.0	1.6
Willow	1.3	0.9	0.4
Hackberry	0.9	0.0	0.9
Red mulberry	0.8	0.0	0.8
Swamp chestnut oak	0.8	0.8	0.0
Live oak	0.4	0.0	0.4
Sugarberry	‡	‡	0.0
Black walnut	‡	0.0	‡
All species	513.4	313.5	199.9

*Numbers in rows and columns may not sum to totals due to rounding.

[†]Ranked by live volume.

[‡]Volume >0.0 but <0.1 million cubic feet.

Table D12.—*Volume of live trees by diameter class and species on woodland, central and west Oklahoma, 1989**

Species	All classes	Diameter class (2-inch)							
		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
		----- Million cubic feet -----							
Eastern redcedar	3.9	1.2	0.5	0.3	0.3	1.6	0.0	0.0	0.0
Chittamwood, gum bumelia	2.9	0.8	0.8	0.9	0.4	0.0	0.0	0.0	0.0
Hickory spp.	15.4	3.1	5.5	4.2	0.6	1.0	0.0	0.0	1.0
Pecan	2.5	0.5	0.0	0.0	0.0	0.0	2.0	0.0	0.0
Sugarberry	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Hackberry	0.9	0.3	0.0	0.6	0.0	0.0	0.0	0.0	0.0
White ash	1.6	1.1	0.5	0.0	0.0	0.0	0.0	0.0	0.0
Green ash	8.4	1.6	1.5	2.3	2.3	0.0	0.7	0.0	0.0
Black walnut	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Red mulberry	0.8	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.8
Blackjack oak	39.5	10.0	14.0	7.5	5.0	1.5	0.1	0.9	0.5
Swamp chestnut oak	0.8	0.8	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Chinkapin oak	1.9	0.5	1.4	0.0	0.0	0.0	0.0	0.0	0.0
Northern red oak	1.6	0.0	0.7	0.0	0.9	0.0	0.0	0.0	0.0
Shumard oak	6.6	0.0	2.0	3.0	0.0	1.4	0.0	0.2	0.0
Post oak	385.8	60.0	82.6	66.8	55.2	54.4	25.7	19.9	21.1
Black oak	27.2	0.7	4.6	8.8	3.5	2.7	0.8	1.1	5.1
Live oak	0.4	0.0	0.0	0.0	0.4	0.0	0.0	0.0	0.0
Willow	1.3	0.0	0.0	0.0	1.3	0.0	0.0	0.0	0.0
Winged elm	5.8	1.9	1.7	0.0	2.3	0.0	0.0	0.0	0.0
American elm	1.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.7
Slippery elm	1.6	0.0	0.8	0.8	0.0	0.0	0.0	0.0	0.0
Others	2.4	0.5	0.0	0.4	1.0	0.4	0.0	0.0	0.0
All species	513.4	82.9	116.7	95.7	73.4	63.1	29.3	22.1	30.3

*Numbers in rows and columns may not sum to totals due to rounding.

Table D13.—*Volume of growing stock by diameter class and species on woodland, central and west Oklahoma, 1989**

Species	All classes	Diameter class (2-inch)							
		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
		----- Million cubic feet -----							
Eastern redcedar	3.7	1.0	0.5	0.3	0.3	1.6	0.0	0.0	0.0
Hickory spp.	13.9	3.1	4.8	3.9	0.0	1.0	0.0	0.0	1.0
Pecan	2.0	0.0	0.0	0.0	0.0	0.0	2.0	0.0	0.0
Sugarberry	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Green ash	8.4	1.6	1.5	2.3	2.3	0.0	0.7	0.0	0.0
Swamp chestnut oak	0.8	0.8	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Chinkapin oak	1.9	0.5	1.4	0.0	0.0	0.0	0.0	0.0	0.0
Northern red oak	0.7	0.0	0.7	0.0	0.0	0.0	0.0	0.0	0.0
Shumard oak	1.5	0.0	1.2	0.1	0.0	0.0	0.0	0.2	0.0
Post oak	256.5	40.0	61.2	37.0	40.4	36.1	18.8	12.1	11.0
Black oak	15.5	0.2	2.2	7.5	3.5	1.1	0.0	0.0	1.1
Willow	0.9	0.0	0.0	0.0	0.9	0.0	0.0	0.0	0.0
Winged elm	4.9	1.9	1.0	0.0	2.0	0.0	0.0	0.0	0.0
American elm	1.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.1
Slippery elm	1.6	0.0	0.8	0.8	0.0	0.0	0.0	0.0	0.0
All species	313.5	48.9	75.5	52.0	49.4	39.9	21.4	12.3	14.2

*Numbers in rows and columns may not sum to totals due to rounding.

Table D14.—*Volume of sawtimber by diameter class and species on woodland, central and west Oklahoma, 1989**

Species	All classes	Diameter class (2-inch)					
		9.0- 10.9	11.0- 12.9	13.0- 14.9	15.0- 16.9	17.0- 18.9	≥19.0
		----- Million board feet [†] -----					
Eastern redcedar	11.0	1.6	1.3	8.1	0.0	0.0	0.0
Hickory spp.	17.9	0.0	0.0	11.5	0.0	0.0	6.4
Pecan	9.7	0.0	0.0	0.0	9.7	0.0	0.0
Green ash	12.8	0.0	9.1	0.0	3.7	0.0	0.0
Shumard oak	0.9	0.0	0.0	0.0	0.0	0.9	0.0
Post oak	596.5	0.0	172.0	178.4	100.5	69.7	75.9
Black oak	27.4	0.0	15.3	6.4	0.0	0.0	5.7
Willow	3.7	0.0	3.7	0.0	0.0	0.0	0.0
Winged elm	6.9	0.0	6.9	0.0	0.0	0.0	0.0
American elm	7.8	0.0	0.0	0.0	0.0	0.0	7.8
All species	694.4	1.6	208.3	204.3	113.8	70.6	95.8

*Numbers in rows and columns may not sum to totals due to rounding.

[†]International 1/4-inch Rule.Table D15.—*Volume of timber by class of timber and forest type on woodland, central and west Oklahoma, 1989**

Forest type	Class of timber				
	All classes	Growing-stock poletimber	Growing-stock sawtimber	Rough poletimber and sawtimber	Rotten poletimber and sawtimber
	<i>----- Million cubic feet -----</i>				
Eastern redcedar	4.1	1.2	0.3	2.5	0.0
Post oak-blackjack oak	509.3	174.8	137.2	184.3	13.0
All types	513.4	176.0	137.5	186.9	13.0

*Numbers in rows and columns may not sum to totals due to rounding.

Table D16.—*Volume of timber by tree grade and species on woodland, central and west Oklahoma, 1989**

Species	All grades	Tree grade [†]	
		No. 1	No. 2
----- Million board feet [‡] -----			
Eastern redcedar	11.0	11.0	0.0
Hickory spp.	17.9	0.0	17.9
Pecan	9.7	0.0	9.7
Green ash	12.8	0.0	12.8
Shumard oak	0.9	0.0	0.9
Post oak	596.5	41.3	555.2
Black oak	27.4	0.0	27.4
Willow	3.7	0.0	3.7
Winged elm	6.9	0.0	6.9
American elm	7.8	0.0	7.8
All species	694.4	52.3	642.2

*Numbers in rows and columns may not sum to totals due to rounding.

[†]See appendix A for definition.

[‡]International 1/4-inch Rule.

Table D17.—*Components of average annual growth* and average annual mortality* of growing stock on woodland by species group, central and west Oklahoma, 1989[†]*

Species group	Gross growth [†]	Net growth [‡]	Component					Growth on mortality	Mortality
			Survivor growth	Nongrowth	Ingrowth	Ongrowth			
				-Million cubic feet-					
Softwood	0.2	0.2	0.0	0.1	0.0	0.1	0.0	0.0	
Hardwood	7.5	7.4	2.0	2.7	0.1	2.7	0.0	0.1	
All species	7.7	7.6	2.0	2.8	0.1	2.8	0.0	0.1	

*Based on previous 10 years growth.

[†]Numbers in rows and columns may not sum to totals due to rounding.

[‡]Gross growth = survivor growth + nongrowth + ingrowth + ongrowth + growth on mortality.

[§]Net growth = survivor growth + nongrowth + ingrowth + ongrowth + growth on mortality - mortality.

Table D18.—*Components of average annual growth* and average annual mortality* of sawtimber on woodland by species group, central and west Oklahoma, 1989[†]*

Species group	Gross growth [‡]	Net growth [§]	Component					Growth on mortality	Mortality
			Survivor growth	Nongrowth	Ingrowth	Ongrowth			
			----- Million board feet [‡] -----						
Softwood	0.3	0.3	0.1	0.0	0.0	0.2	0.0	0.0	
Hardwood	21.3	20.9	4.5	2.9	11.6	1.5	0.8	0.4	
All species	21.6	21.2	4.6	2.9	11.6	1.7	0.8	0.4	

*Based on previous 10 years growth.

[†]Numbers in rows and columns may not sum to totals due to rounding.

[‡]Gross growth = survivor growth + nongrowth + ingrowth + ongrowth + growth on mortality.

[§]Net growth = survivor growth + nongrowth + ingrowth + ongrowth + growth on mortality - mortality.

[‡]International 1/4-inch Rule.

Table D19.—*Sampling errors for growing-stock volume, growing-stock growth, and sawtimber volume by county for woodland, central and west Oklahoma, 1989**

County	Growing-stock volume	Growing-stock growth	Sawtimber volume
	-----Percent-----		
Caddo	†	†	†
Canadian	†	14.2	†
Carter	40.9	†	†
Comanche	28.8	†	34.4
Craig	0.0	0.0	0.0
Creek	28.3	49.5	†
Dewey	0.0	0.0	0.0
Garfield	0.0	0.0	0.0
Grady	0.0	0.0	0.0
Hughes	30.2	38.3	33.2
Jefferson	44.9	†	36.4
Johnston	†	†	†
Kingfisher	0.0	0.0	0.0
Lincoln	31.4	34.4	†
Logan	0.0	0.0	0.0
Love	†	†	†
Major	†	†	0.0
Marshall	0.0	0.0	0.0
Noble	11.6	43.9	†
Nowata	17.1	5.4	47.0
Okfuskee	10.1	†	37.8
Oklahoma	33.8	37.3	†
Okmulgee	36.5	†	†
Osage	27.0	32.2	47.7
Pawnee	32.0	†	47.7
Payne	24.2	30.9	11.8
Pontotoc	32.5	†	27.6
Pottawatomie	46.0	†	†
Rogers	7.5	40.5	†
Seminole	9.0	23.9	24.2
Stephens	†	47.0	†
Tulsa	42.0	†	0.0
Washington	0.0	0.0	0.0
Woodward	0.0	0.0	0.0
All counties	9.0	12.5	13.5

* See definition of sampling error in appendix A.

† Sampling error greater than 50 percent.

Rosson, James F., Jr. 1995. The timberland and woodland resources of central and west Oklahoma, 1989. Resour. Bull. SO-193. New Orleans, LA: U.S. Department of Agriculture, Forest Service, Southern Forest Experiment Station. 35 p.

Principal findings of the first forest survey of central and west Oklahoma are presented. Topics examined include forest area, forest types, stand structure, basal area, timber volume, growth, and mortality. Information is presented for timberland and woodland forests.

Keywords: Forest inventory, forest productivity, forest survey, large- scale sample.

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