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Forest Statistics for East Oklahoma Counties-I 993

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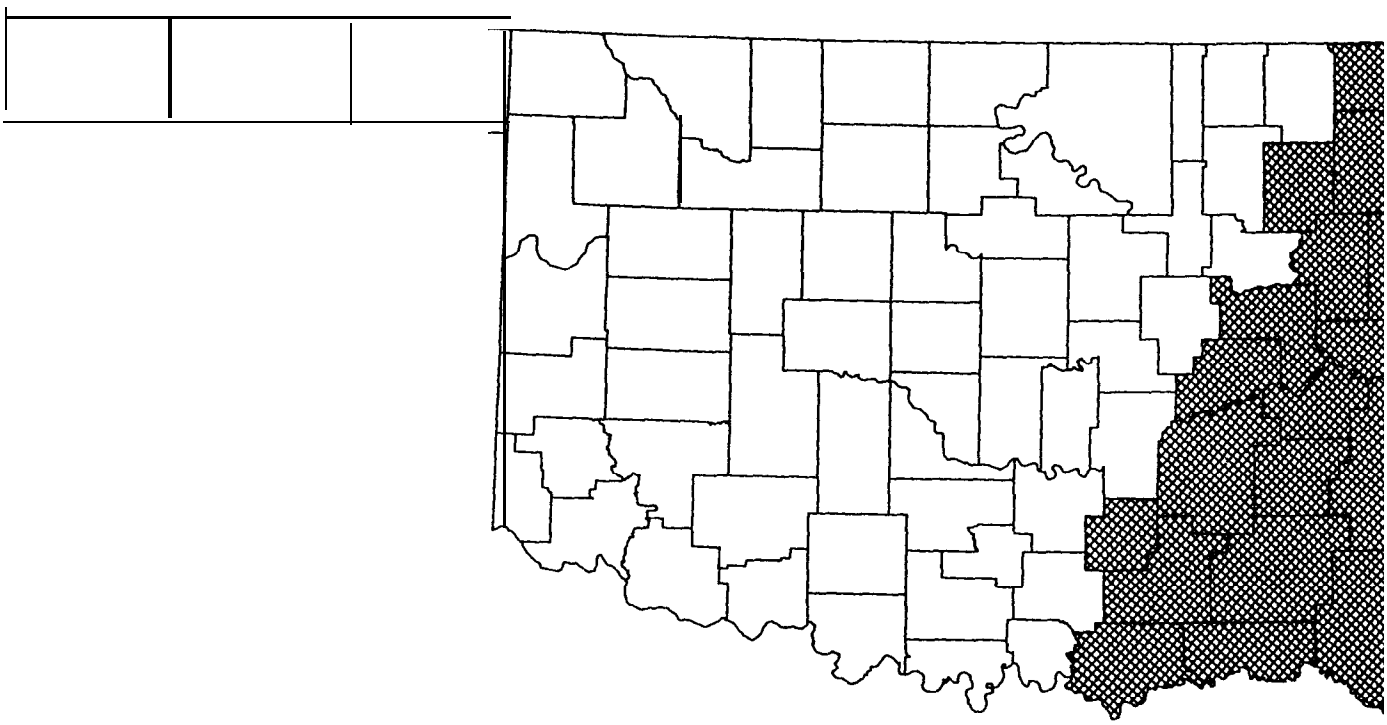

FOREWORD

The USDA-Forest Service, Southern Forest Experiment Station, Forest Inventory and Analysis unit (SO-FIA), conducts forest inventories covering the States of Alabama, Arkansas, Louisiana, Mississippi, east Oklahoma, Tennessee, and east Texas and the Commonwealth of Puerto Rico.

The SOFIA forest inventories are part of a nationwide effort originally authorized by the McSweeney–McNary Act of 1928. More recent legislation pertinent to the SOFIA mission includes the Forest and Rangeland Renewable Resources Planning Act of 1974 and the Forest and Rangeland Renewable Resources Research Act of 1978. The SOFIA mission is to develop, analyze, and maintain forest resource information that is essential for formulation of forest policies and programs.

ACKNOWLEDGMENTS

The SOFIA gratefully acknowledges the cooperation and excellent assistance provided by the Oklahoma Division of Forestry and Georgia-Pacific Corporation in collecting the field data. Appreciation is also expressed for the cooperation of other public agencies and private landowners in providing access to measurement plots.

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*Core tables are presented in response to the Southern Industrial Forestry Research Council's recommendations. These tables are identical among Forest Inventory and Analysis units in the eastern United States.

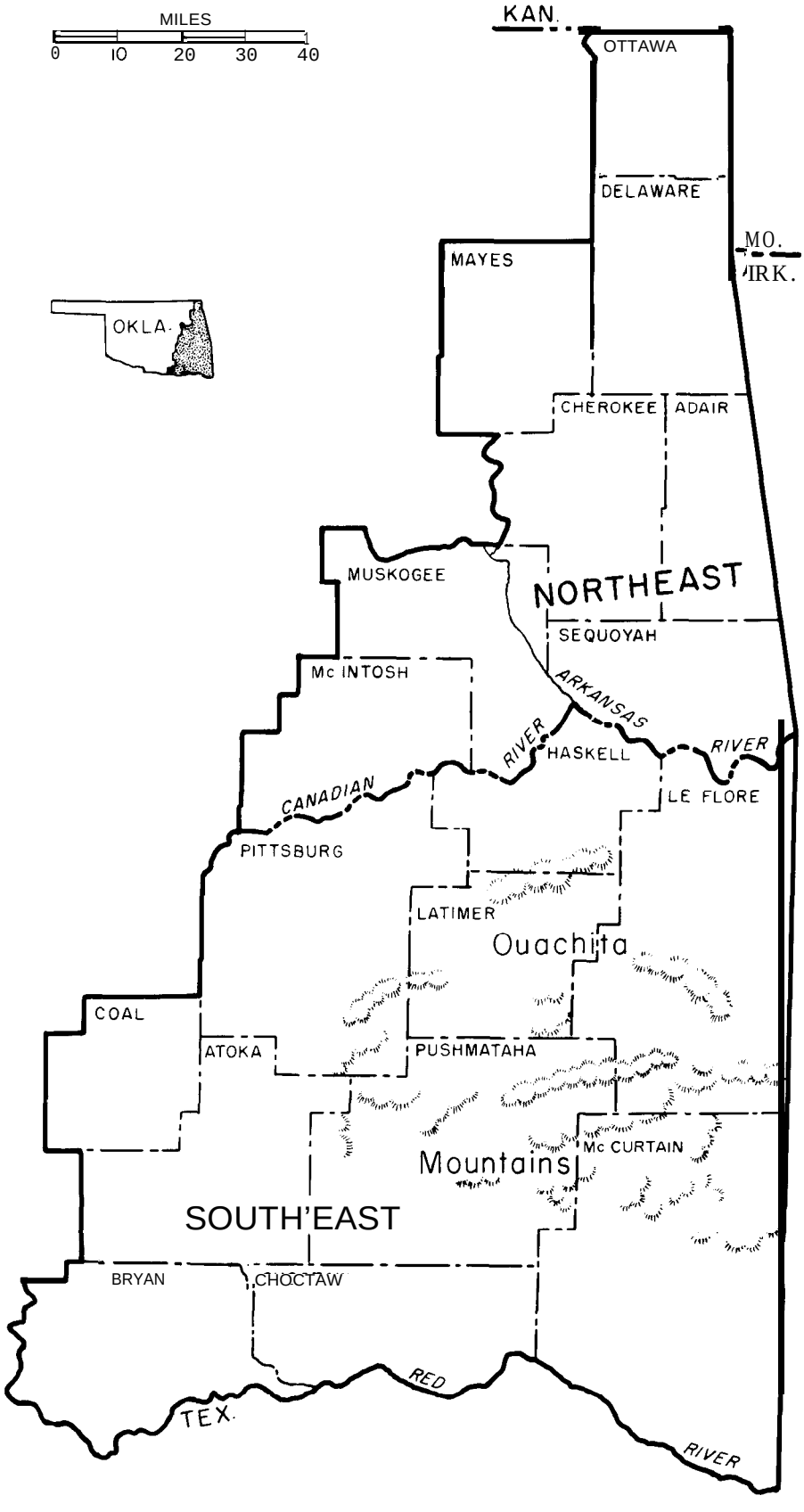

Figure *I.- Forest survey regions in Oklahoma.*

Forest Statistics for East Oklahoma Counties-1993

Patrick E. Miller Andrew J. Hartsell, and Jack D. London

INTRODUCTION

This report contains the statistical tables and figures derived from data obtained during a recent inventory of east Oklahoma. The multiresource inventory included 18 counties and two survey regions (fig.I). Data on forest acreage and timber volume involved a three-step procedure. First, estimate of forest acreage were made for each county using aerial photographs. Classification of forest-nonforest points was accomplished, each representing approximately 230 acres. Second, these estimates were adjusted based on ground observations at 2,762 sample locations. Finally, field measurements were made at forest locations on the intersections of grid lines spaced 3 miles apart. At each forest locations, per-acre estimates were obtained from trees measured on ten 37.5 basal area factor prism points.

The sampling methods are designed to achieve suitable sampling errors for estimates of area and volume at the State level. Sampling error increases as the area or volume decreases. Individuals are advised to use discretion when using single counties which are subject to higher sampling errors. The sampling errors presented in Table I, equal to one standard deviation for the sample data, may be used to construct confidence intervals for the population estimates. For example, at the 95-percent confidence level, the confidence interval for growing-stock volume (in million cubic feet) for east Oklahoma with a sampling error of 3.1 percent is

$$3{,}001.5 \pm 1.96(0.031 \times 3{,}001.5) = 3{,}001.5 \pm 182.4$$

where 1.96 is the number of standard deviations. This confidence interval indicates that the actual growing-stock volume lies in the range 2,8 19.1 to 3,183.9 million cubic feet, unless a 1-in-20 chance has occurred.

Sampling errors may be estimated for any group of counties by the following formula:

$$SE_g = SE_s \sqrt{\frac{X_s}{X_g}}$$

where

SE_g = standard error of estimate (expressed as a percent) for the group of counties desired

SE, = standard error of estimate (expressed as a percent) for the State.

X_g = sum of values for the variable of interest (area or volume) for group of counties to be combined

X, = total area or volume for the State.

For example, the sampling error estimate for growing-stock volume is 4.3 percent for Adair, Cherokee, Le Flore, McCurtain, and Sequoyah Counties and is computed as:

$$SE_g = 3.1 \frac{\sqrt{3{,}001.5}}{\sqrt{11{,}561.4}} = 4.3$$

Thus, a 95-percent confidence interval for growing-stock volume is 1,561.4 ± 13 1.6 million cubic feet.

Ownership information is obtained by the same systematic sample outlined above. County courthouse records are used to obtained ownership information for each forested plot. An expansion factor represented timberland area in that county is then applied to the ownership group the plot represents. Next, the ownership groups are totaled for each county. Thus, acreages reported at the county level are estimates and may not exactly match known totals for each ownership category within that county.

In order to achieve greater compatibility among Forest Inventory and Analysis units, a modified tree classification system has been in effect since the 1988 inventory of Arkansas. Tree grade 5 is used to designate trees currently or prospectively capable of producing at least one 12-foot log or two 8-foot logs in the sawlog portion, but are not capable of producing a 12-foot log meeting grade and soundness requirements in the butt 16-foot section. These trees, formerly classed as rough or rotten, are now included in growing stock. Any comparisons with previous estimates of growing stock or sawtimber should be based on data that has been reprocessed to account for the change in definition.

Tables l-25 are developed to provide compatibility among Forest Inventory and Analysis units. Tables 26-43 are supplementary tables and may change from unit to unit or State to State to address specific resource issues.

DEFINITION OF TERMS

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, andsalvable dead trees-See "tree classes."

Saplings-Trees 1 .O inches to 4.9 inches in d.b.h.

Sawtimber trees-Trees 9.0 inches and larger in d.b.h. for softwoods, and 11 .O inches and larger for hardwoods.

Seedlings-Trees less than 1.0 inch in d.b.h. and greater than 1 foot tall for hardwoods, greater than 6 inches tall for softwoods, and greater than 0.5 inch in diameter at ground level for longleaf pine.

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Table *I.-Sampling errors* for timberland, live trees, growing stock, and sawtimber, east Oklahoma counties, 1993*

County	Timberland	Live trees			Growing stock			Sawtimber volume
		Volume	Growth	Removals	Volume	Growth	Removals	
	Percent							
Adair	2.0	9.3	28.4	41.5	14.5	t	42.2	18.0
Atoka	2.5	10.0	12.3	41.0	13.3	13.6	41.4	18.8
Bryan	1.9	17.2	15.7	†	28.7	27.1	t	30.4
Cherokee	3.3	10.7	14.7	40.1	13.8	19.0	42.9	20.7
Choctaw	2.9	12.8	15.3	45.2	15.8	19.4	46.6	21.0
Coal	5.4	26.8	23.4	†	37.9	†	t	47.3
Delaware	2.3	10.3	15.2	45.9	14.2	19.0	†	21.6
Haskell	3.7	19.7	40.4	†	25.7	40.5	t	48.2
Latimer	3.2	9.6	14.2	†	13.3	15.9	†	18.8
Le Flore	1.2	7.0	11.2	31.1	8.3	12.9	31.6	13.1
McCurtain	0.9	5.4	8.0	18.3	5.7	8.1	18.3	10.2
McIntosh	3.3	13.3	t	†	20.3	†	t	35.1
Mayes	1.9	11.1	10.8	t	14.5	14.0	†	18.0
Muskogee	3.4	10.9	11.4	t	13.3	12.9	t	20.7
Ottawa	2.2	21.7	36.2	†	26.0	25.9	†	44.0
Pittsburg	4.5	14.5	26.1	49.6	21.7	31.5	†	26.8
Pushmataha	1.1	5.6	6.8	25.4	6.6	7.3	25.8	11.3
Sequoyah	2.9	8.6	17.1	†	10.8	19.5	t	19.3
All counties	0.6	2.5	3.8	10.7	3.1	4.3	10.9	4.9

*By random-sampling formula.
†Sampling error greater than 50.

Forest Land Classes

Forest land-Land at least 16.7-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, reserved timberland, and woodland.

Reserved timberland—Productive public forest land withdrawn from timber utilization through statute or administrative regulations.

Timberland—Forest land that is producing or is capable of producing, crops of industrial wood and not withdrawn from timber utilization. Timberland is synonymous with "commercial forest land" in prior reports.

Woodland-Forest land incapable of yielding crops of industrial wood because of adverse site conditions.

Forest Types

Elm–ash–cottonwood—Forests in which elms, ashes, or cottonwoods, singly or in combination, comprise a plurality of the stocking. Common associates include willows, sycamore, American beech, and maples.

Loblolly–shortleaf pine-Forests in which pines (except longleaf and slash pine) and eastern redcedar, singly or in combination, comprise a plurality of the stocking. Common associates include oaks, hickories, and gums.

Longleaf-slash pine-Forests in which longleaf or slash pine, singly or in combination, comprise a plurality of the stocking. Common associates include other southern pines, oaks, and gums.

Nontyped—Timberland currently unoccupied by any live trees or seedlings; for example, very recent clearcut areas.

Oak-gum-cypress-Bottomland forests in which tupelo, blackgum, sweetgum, oaks, or southern cypress, singly or in combination, comprise a plurality of the stocking except where pines comprise 25 to 49 percent, in which case the stand would be classified oak-pine. Common associates include cottonwoods, willows, ashes, elms, hackberry, and maples.

Oak-hickory-Forests in which upland oaks or hickories, singly or in combination, comprise a plurality of the stocking, except where pines comprise 25 to 49 percent, in which case the stand would be classified oak-pine. Common associates include yellow-poplar, elms, maples, and black walnut.

Oak-pine-Forests in which hardwoods (usually upland oaks) comprise a plurality of the stocking, but in which softwoods, except cypress, comprise 25 to 49 percent of the stocking. Common associates include gums, hickories, and yellow-poplar.

Growth Classes

Grossgrowth-Total increase in stand volume computed on growing-stock trees or live trees at least 5.0 inches in d.b.h. Gross growth equals survivor growth, plus ingrowth, plus growth on removals, plus growth on mortality, plus cull increment (for growing stock computations). Gross growth includes mortality.

Net change-Increase or decrease in stand volume computed on growing-stock trees or live trees at least 5.0 inches in d.b.h. Net change is equal to net growth minus removals.

Net growth-Increase in stand volume computed on growing-stock trees or live 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 sound-wood volume of growing-stock or live trees dying from natural causes for the intersurvey period.

Average annual removals-Average net annual volume of growing-stock or live trees removed from the inventory by harvesting, cultural operations (such as timber-stand improvement), land clearing, or changes in land use 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.

Cull *increment-The* change in growing-stock volume due to growing-stock, rough, or rotten trees changing tree class between surveys.

D. b.h. (diameterat 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.

Log *grades-A* classification of logs based on external characteristics as indicators of quality or value.

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

Natural stands-Stands with no evidence of artificial regeneration. This includes those stands established by seed-tree regeneration methods.

Plantations-Planted or artificially seeded stands.

Removals-The net volume of growing-stock or live trees removed from the inventory by harvesting, cultural operations (such as timber stand improvement), land clearing, or changes in land use.

Sawlog portion-That portion of the bole of a sawtimber tree between a l-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 d.o.b. for softwoods and 9.0 inches d.o.b. for hardwoods.

Select red oaks-A group of several red oak species composed of cherrybark, Shumard, and northern red oaks. Other red oak species are included in the "other red oaks" group.

Select white oaks-A group of several white oak species composed of white, swamp chestnut, swamp white, chinkapin, Durand, and bur oaks. Other white oak species are included in the "other white oaks" group.

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

Tree grade-A classification of the sawlog portion of sawtimber trees based on: (1) the grade of the butt log or (2) the ability to produce at least one 12-foot or two S-foot logs in the upper section of the sawlog portion.

Upper-stem portion-That part of the main stem of a sawtimber tree above the sawlog top to a diameter outside bark of 4.0 inches or to the point where the main stem breaks into limbs.

Ownership Classes

Farmer-owned land-Lands operated as a unit of 10 acres or more and from which the sale of agricultural products totals $1,000 or more annually.

Forest industry land-Lands owned by companies or individuals operating wood-using plants (either primary or secondary).

National forest land-Federal lands that have been legally designated as national forests or purchase units and other lands under the administration of the Forest Service, including experimental areas.

Nonindustrial private land (corporate)-Lands privately owned by private corporations other than forest industries and incorporated farms.

Nonindustrial private land (individual)-Lands privately owned by individuals other than forest industries or farmers.

Other Federal land-Federal lands other than National Forests.

State, county, and municipal land-Lands owned by States, counties, and local public agencies or municipalities or lands leased to these governmental units for 50 years or more.

Stand-size Classes

Nonstocked stands-Stands less than 16.7 percent stocked with live trees.

Poletimber stands-Stands at least 16.7 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.

Sapling-seedling stands-Stands at least 16.7 percent stocked with live trees, with more than half of this stocking in saplings or seedlings.

Sawtimber stands-Stands at least 16.7 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 preempted 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.

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

D.b.h. (Inches)	Number of trees	D.b.h. (Inches)	Number of trees
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

Arbitrarily defined stocking categories are 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.

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 12-foot or two 8-foot logs in the sawlog portion currently or potentially (if too small to qualify) to be classed as growing stock. The log(s) must meet dimension and merchantability standards to qualify. Trees must also have currently or potentially one-third of the gross board-foot volume in sound wood.

Hardwoods-Dicotyledonous trees, usually broad leaved and deciduous.

Live trees-All trees that are alive. Included are all size classes, all tree classes, and both commercial and noncommercial 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 leaves that are needles or scalelike.

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 I-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 ofgrowing stock-The cubic-foot volume of sound wood in growing-stock trees at least 5.0 inches in d.b.h. from a l-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.

Table 1.—*Area by county and land class, east Oklahoma counties, 1993*

county	All land'	Forest land				Nonforest land
		Total	Timberland	Woodland	Reserved timberland	
	Thousand acres					
Adair	369.1	227.2	227.2			141.9
Atoka	627.2	343.8	309.1	25.8	8.9	283.4
Bryan	5776	156.3	156.3			421.2
Cherokee	479.0	294.3	260.8	33.4		184.7
Choctaw	487.9	208.4	191.9	16.5		279.5
Coal	333.1	99.1	58.2	41.6		233.3
Delaware	461.0	214.2	214.2		..	246.8
Haskell	364.7	180.9	157.5	23.3	..	183.8
Latimer	466.0	320.2	291.6	28.6		145.8
Le Flore	1,014.3	674.8	652.8		22.0	339.5
McCurtain	1,168.9	850.9	831.7	5.1	14.1	318.0
McIntosh	383.5	162.4	136.4	26.0		221.1
Mayes	411.9	125.2	125.2			286.7
Muskogee	521.3	144.5	107.0	37.5		376.8
Ottawa	297.6	46.7	46.7			250.8
Pittsburg	800.4	391.3	175.4	215.9		409.1
Pushmataha	906.6	745.6	739.6	6.1		161.0
Sequoyah	433.9	231.4	213.6	17.8		202.5
All counties	10,103.8	5,417.8	4,895.5	477.4	45.0	4,686.0

*From the U.S. Bureau of the Census.

Table *2.-Area of timberland by county and ownership class, east Oklahoma counties. 1993*

county	All Ownerships	National forest	Misc. federal	State	County and municipal	Forest industry*	Farmer	Corporate†	Individual†
	Thousand acres								
Adair	227.2				7.6		60.6	15.1	143.9
Atoka	309.1		32.2	6.4			25.8	19.3	225.4
Bryan	156.3	..	6.0				120.3	18.0	12.0
Cherokee	260.8		6.1	26.8		.	160.5	6.7	60.2
Choctaw	191.9		21.9				109.7	5.5	54.8
Coal	58.2						41.6		16.6
Delaware	214.2			6.7	13.4		107.1	46.9	40.2
Haskell	157.5		11.7			17.5	5.8		122.5
Latimer	291.6		..	34.3			51.5	11.4	194.4
Le Flore	652.8	180.6	24.9			118.1	43.5	6.2	279.6
McCurtain	831.7	42.1	33.4			578.3	72.3	5.6	100.1
McIntosh	136.4		13.0				13.0	19.5	91.0
Mayes	125.2		13.9	7.0				20.9	83.5
Muskogee	107.0		32.1				26.8	10.7	37.5
Ottawa	46.7						29.1	4.2	12.7
Pittsburg	175.4		6.7	6.7			60.7	20.2	81.0
Pushmataha	739.6			30.3		333.4	103.1	30.3	242.5
Sequoyah	213.6		17.8				65.3	23.7	106.8
All counties	4,895.5	222.1	220.3	118.2	21.0	1,047.3	1,097.1	264.3	1,904.7

*Includes land leased to forest industry.
†Indian land will be classed as corporate or individual as defined by the Bureau of Indian Affairs

Table 3.-Area of ***timberland by county andforest type group, east Oklahoma counties, 1993***

county	Total	Forest type group					
		Loblolly-shortleaf pine		Oak-pine	Oak-hickory	Oak-gum-cypress	Elm-ash-cottonwood
		Planted	Natural				
	Thousand acres						
Adair	221.2		7.6		219.6	...	...
Atoka	309.1		51.5	38.6	128.8	70.8	19.3
Bryan	156.3			...	120.3	30.1	6.0
Cherokee	260.8		6.7	6.7	227.4	13.4	6.7
Choctaw	191.9	11.o	11.0	11.0	120.7	38.4	
Coal	58.2		. .		33.2	24.9	...
Delaware	214.2		...	6.7	207.5		. .
Haskell	157.5		11.7	29.2	81.7	29.2	5.8
Latimer	291.6		62.9	91.5	131.5	5.7	
Le Flore	652.8	79.2	118.4	133.2	272.3	43.5	6.2
McCurtain	831.7	293.2	109.8	133.6	237.4	52.1	5.6
McIntosh	136.4				84.5	19.5	32.5
Mayes	125.2		7.0		104.4	13.9	
Muskogee	107.0				101.7	5.4	.
Ottawa	46.7				46.7		
Pittsburg	175.4		13.5	33.7	101.2	27.0	
Pushmataha	739.6	90.9	224.3	206.1	200.1	18.2	. .
Sequoyah	213.6			11.9	172.0	17.8	11.9
All counties	4,895.5	474.3	624.3	702.2	2.590.8	409.9	94.0

Table 4.—*Area of* ***timberland by county and stand-size class, east Oklahoma counties, 199.3***

County	All classes	Stand-size class			Nonstocked areas
		Sawtimber	Poletimber	Sapling-seedling	
	Thousand acres				
Adair	227.2	128.7	60.6	37.9	
Atoka	309.1	90.2	135.3	83.7	
Bryan	156.3	60.1	36.1	60.1	.
Cherokee	260.8	86.9	80.3	93.6	
Choctaw	191.9	71.3	43.9	76.8	.
Coal	58.2	24.9	8.3	24.9	
Delaware	214.2	73.6	60.3	80.3	
Haskell	157.5	40.8	75.8	40.8	
Latimer	291.6	108.6	131.5	51.5	
Le Flore	652.8	163.1	313.4	176.3	.
McCurtain	831.7	199.4	374.7	257.7	
McIntosh	136.4	45.5	65.0	26.0	
Mayes	125.2	69.6	41.7	13.9	
Muskogee	107.0	26.8	58.9	21.4	
Ottawa	46.1	17.0	12.7	17.0	
Pittsburg	175.4	60.7	41.2	67.5	...
Pushmataha	739.6	181.9	369.8	187.9	
Sequoyah	213.6	47.5	89.0	77.1	
All counties	4,895.5	1,496.6	2,004.3	1,394.5	.

Table 5.—*Area of timberland by county and site class, east Oklahoma counties, 1993*

county	All classes	Site Class *(Cubic feet/acre/year)*				
		>165	120-165	85-120	50–85	<50
	Thousand acres					
Adair	221.2			15.1	128.7	83.3
Atoka	309.1			32.2	167.5	109.5
Bryan	156.3		12.0		36.1	108.2
Cherokee	260.8		6.7	13.4	80.3	160.5
Choctaw	191.9		16.5	38.4	82.3	54.8
Coal	58.2		8.3		24.9	24.9
Delaware	214.2		6.7	6.1	100.4	100.4
Haskell	157.5	5.8	11.7	5.8	46.7	87.5
Latimer	291.6		5.7	5.7	165.8	114.3
Le Flore	652.8		12.4	73.4	395.3	171.7
McCurtain	831.7	28.0	91.6	224.5	409.8	77.8
McIntosh	136.4			6.5	45.5	84.5
Mayes	125.2			20.9	41.7	62.6
Muskogee	107.0				42.8	64.2
Ottawa	46.1				29.7	17.0
Pittsburg	175.4			6.1	87.7	81.0
Pushmataha	739.6		18.2	121.2	436.5	163.7
Sequoyah	213.6	5.9		17.8	100.8	89.0
All counties	4,895.5	39.8	189.8	588.4	2,422.5	1,655.0

Table 6.-Area of** timberland **by** county **and stocking class of growing-stock** trees, **east Oklahoma counties, 1993

County	All classes	Stocking class (Percent)				
		>130	100–130	60–100	16.760	<16.7
	Thousand acres					
Adair	227.2			***68.2***	151.5	1.6
Atoka	309.1		***6.4***	***90.2***	180.3	32.2
Bryan	156.3		***6.0***	***12.0***	90.2	48.1
Cherokee	260.8		***6.7***	***93.6***	160.5	
Choctaw	191.9		***5.5***	***38.4***	142.6	5.5
Coal	58.2				41.6	16.6
Delaware	214.2			33.5	174.1	6.7
Haskell	157.5		5.8	46.1	99.2	5.8
Latimer	291.6		28.6	125.8	137.2	
Le Flore	652.8	6.2	95.9	292.4	258.3	
McCurtain	831.7	35.3	128.6	471.3	196.5	
McIntosh	136.4			13.0	104.0	19.5
Mayes	125.2			27.8	83.5	13.9
Muskogee	107.0			53.5	48.2	5.4
Ottawa	46.7			8.5	38.2	
Pittsburg	175.4		6.7	20.2	128.2	20.2
Pushmataha	139.6	12.1	84.9	381.9	236.4	24.2
Sequoyah	213.6			47.5	136.4	29.1
All counties	4,895.5	53.6	375.2	1.824.5	2,406.8	235.4

Table 7.—*Area of timberland by forest type and ownership class, east Oklahoma counties. 1993*

Forest type	All ownerships	National forest	Other public	Forest industry	Forest industry-leased	Other private
	Thousand acres					
Loblolly–shortleaf pine	1,098.6	135.5	54.6	595.8		312.7
Softwood total	1,098.6	135.5	54.6	595.8		312.7
Oak-pine	702.2	58.2	48.1	232.7		363.2
Oak-hickory	2,590.8	21.3	188.5	201.6		2.179.5
Oak-gum-cypress	409.9	*7.1*	*56.6*	*17.2*		*328.4*
Elm-ash-cottonwood	94.0		11.8			82.2
Hardwood total	3.796.9	87.1	304.9	451.5		2,953.4
All types	4,895.5	222.7	359.5	1,047.3		3,266.1

Table 8.—*Area of timberland by ownership and stocking class of growing-stock trees, east Oklahoma counties, 1993*

Ownership class	All classes	Stocking class (Percent)				
		>130	100-130	60-100	16.7–60	<16.7
	Thousand acres					
National forest	222.7	1.9	75.4	102.7	42.7	
Other public	359.5		5.8	137.3	209.4	7.0
Forest industry	1,047.3	40.6	168.4	613.2	213.0	12.1
Other private	3,266.1	11.1	125.6	971.3	1.941.7	216.3
All ownerships	4,895.5	53.6	375.2	1,824.5	2.406.8	235.4

Table 9.—*Area of timberland by forest type and stand-size class, east Oklahoma counties, 1993*

Forest type	All classes	Stand-size class			Nonstocked areas
		Sawtimber	Poletimber	Sapling-seedling	
	Thousand acres				
Loblolly-shortleaf pine	1,098.6	391.9	530.3	176.4	
Softwood total	1.098.6	391.9	530.3	176.4	
Oak-pine	702.2	177.5	294.4	230.3	
Oak-hickory	2,590.8	679.7	1,037.2	874.0	
Oak-gum-cypress	409.9	203.3	111.7	94.8	
Elm–ash–cottonwood	94.0	44.2	30.9	18.9	
Hardwood total	3.796.9	1,104.7	1.474.1	1,218.1	
All types	4,895.5	1,496.6	2,004.3	1,394.5	

Table IO.-Number of live trees on timberland by species and diameter class, east Oklahoma counties, I993

Species	All classes	Diameter class (Inches at breast height) 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	19.0–20.9	21.0–28.9	≥29.0
	Thousand trees												
Shortleaf–loblolly pines	600,973	235,814	130,774	111,604	68,535	27,590	14,116	7,495	3,050	1,333	467	188	9
Cypress	245	...	...	99	...	82	...	39	...	12	9	...	4
Other softwoods	74,755	47,481	18,667	5,820	1,791	449	331	120	67	12	9	8	...
Total softwoods	675,973	283,295	149.441	117.523	70.326	28.121	14.447	7.654	3.117	1.356	485	196	13
Select white oaks	126,159	74,858	24,453	10,954	6,916	3,795	2,074	1.180	811	534	266	304	13
Select red oaks	63,095	36,007	10,332	5,267	4,596	2,396	1,478	1,225	609	515	215	343	112
Other white oaks	476,387	218,676	134,489	54,298	30,040	16,443	9,188	7,017	3,262	1,491	671	800	11
Other red oaks	242,655	145,698	40,677	19,935	12,225	7,962	5,848	3,881	2,898	1,557	897	976	102
Hickory	346.510	203,976	81,798	29,595	15,009	7,789	4,043	2,154	1,183	513	221	190	38
Hard maple	8,992	7,059	1,204	100	293	115	42	122	33	17		8	.
Soft maple	74,338	53,704	14,646	2,736	1,361	457	298	406	243	220	109	142	17
Sweetgum	49,978	33,620	10,533	3,145	1,301	384	482	206	187	79	10	21	10
Tupelo–blackgum	46,714	36,773	5,836	1,504	1,099	536	315	268	231	54	60	37	
Ash	63,894	33,275	14,252	6,498	4.401	2,497	1,291	647	481	288	125	134	4
Cottonwood-aspen	7.797	2,176	2,719	1,355	257	492	172	323	65	15	20	189	15
Basswood	691	503			125		49		15	...		...	
Black walnut	5,960	3,339	613	975	262	297	143	189	51	16	24	47	4
Other hardwoods	567,155	399.581	102.408	36.426	14.112	7.238	3.506	1.768	908	585	240	327	55
Total hardwoods	2,080,325	1,249,244	443,960	172,788	91,996	50,400	28,930	19,387	10,978	5,883	2,857	3,519	382
Noncommercial	325,447	227,006	56,838	19,894	9,996	6,604	2,780	1,173	735	234	115	72	.
All species	3,081,745	1,759,545	650,239	310,206	172.319	85,125	46,157	28,213	14,829	7,474	3,456	3,787	395

Table 11 .-Number Of growing-stock trees on timberland by species and diameter class, east Oklahoma counties, 1993

Species	All classes	Diameter class (Inches at breast height) 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	19.0–20.9	21.0–28.9	≥29.0
	Thousand trees												
Shortleaf-lobblly pines	469,365	139,562	105,970	105,283	66,448	26,273	13,681	7,302	2,949	1,265	434	188	9
Cypress	103					38		39		12	9	.	4
Other softwoods	71,027	44,764	18,667	5.433	1,373	343	232	120	67	12	9	8	
Total softwoods	540,495	184,326	124,637	110,717	67,821	26,654	13,913	7,461	3,016	1,289	452	196	13
Select white oaks	70,545	37,217	15,423	7,732	5,702	2,390	1,014	399	305	135	123	102	4
Select red oaks	34,829	16,963	5,976	3,979	3,500	1,527	1,017	776	329	317	147	197	99
Other white oaks	211,260	67,793	63,712	39,555	22,313	9,752	3,865	2,382	1,108	413	188	178	
Other red oaks	138,829	73,036	24,667	15,663	9,728	6,008	3,847	2,333	1,737	812	516	451	31
Hickory	132,323	61,389	34,437	18,754	8,772	4,533	1,881	1,459	632	291	74	75	26
Hard maple	1,324	1,080		100		35	42	51	18	.	.		...
Soft maple	16,272	9,056	4,416	1,276	691	84	121	179	140	129	67	99	13
Sweetgum	33,067	21,563	6,863	2,324	1,068	350	447	206	155	56	10	21	3
Tupelo-blackgum	18,611	13,042	3,143	1,051	645	234	120	158	133	42	41	2	
Ash	23,787	6,281	7,621	3,497	2,849	1,777	824	332	315	137	101	53	...
Cottonwood-aspen	2,806		544	845	257	366	172	323	65	15	20	189	10
Basswood	83				57		25				...		...
Black walnut	1,703	1,003		286	.	170	38	103	37	16	24	26	
Other hardwoods	107.753	55,474	23,748	13.724	6,576	4,405	1,775	1,031	432	312	120	147	9
Total hardwoods	793,192	363,896	190,550	108,786	62,159	31,633	15,188	9.731	5,408	2,673	1,430	1,542	196
All species	1.333.688	548.222	315.188	219.502	129.980	58.287	29.101	17.192	8.424	3.962	1.883	1.737	209

Table 12.-Volume of growing *stock on timberland by species and diameter class, east Oklahoma counties, 1993*

Species	All classes	Diameter class *(Inches at breast height)* 5.0–6.9	7.0–8.9	9.0–10.9	11.0–12.9	13.0-14.9	15.0-16.9	17.0–18.9	19.0–20.9	21.0–28.9	≥29.0
	Million cubic feet										
Shortleaf-loblolly pines	1,364.6	220.0	313.8	258.2	223.0	165.7	92.7	51.3	22.1	16.8	1.0
Cypress	3.1			0.3		0.9		0.3	0.4		1.2
Other softwoods	27.1	10.2	5.3	3.1	3.4	2.6	1.4	0.4	0.5	0.2	
Total softwoods	1.394.8	230.2	319.1	261.6	226.5	169.2	94.1	52.1	22.9	17.0	2.2
Select white oaks	126.5	20.3	31.5	24.3	16.6	8.4	8.6	4.7	5.4	6.1	0.4
Select red oaks	123.3	10.9	18.2	14.4	15.4	15.8	8.9	11.3	5.9	11.8	10.8
Other white oaks	394.1	85.7	99.5	73.5	45.8	39.8	25.1	10.9	6.1	7.6	
Other red oaks	355.3	34.3	47.8	51.6	52.8	46.0	44.7	27.7	20.6	27.1	2.7
Hickory	199.0	35.2	37.8	37.7	24.1	27.5	16.2	10.0	3.3	5.1	2.0
Hard maple	2.6	0.3		0.5	0.5	0.8	0.5				
Soft maple	35.1	3.4	4.5	1.4	2.1	4.5	3.5	4.6	3.2	6.3	1.6
Sweetgum	36.6	5.6	5.7	3.5	7.9	4.8	4.9	2.1	0.5	1.5	0.1
Tupeloblackgum	19.2	2.3	2.9	2.1	1.7	3.4	3.8	1.3	1.7	0.2	
Ash	81.9	8.6	16.0	18.1	12.0	7.2	8.8	4.9	3.6	2.8	...
Cottonwood-aspen	42.5	1.2	1.2	3.1	3.0	7.4	2.6	0.5	1.3	20.4	1.8
Basswood	0.7		0.3		0.4						..
Black walnut	8.5	0.6		1.4	0.3	2.4	1.1	0.7	0.5	1.5	
Other hardwoods	181.2	28.7	31.2	38.1	25.2	21.0	11.8	9.9	5.2	9.3	0.9
Total hardwoods	1,606.7	237.1	296.7	269.7	207.7	189.1	140.4	88.6	57.4	99.7	20.3
All species	3,001.5	467.3	615.8	531.4	434.2	358.3	234.5	140.7	80.3	116.6	22.4

Table 13.—*Volume of growing stock in the sawlog portion of sawtimber frees on timberland by species and diameter class, east Oklahoma counties. 1993*

Species	All classes	Diameter class *(Inches at breast height)* 9.0–10.9	11.0–12.9	13.0-14.9	15.0-16.9	17.0-18.9	19.0-20.9	21.0–28.9	≥29.0
				Million cubic feet					
Shortleaf-loblolly pines	706.1	213.1	193.2	141.5	79.9	44.1	18.6	14.8	0.9
Cypress	2.1	0.2		0.8		0.3	0.3		0.5
Other softwoods	10.3	2.5	2.9	2.5	1.4	0.4	0.5	0.2	..
Total softwoods	718.5	215.8	196.1	144.7	81.3	44.8	19.4	15.0	1.4
Select white oaks	40.2		12.1	7.0	7.1	4.0	4.5	5.1	0.4
Select red oaks	66.9		11.6	12.4	6.9	10.2	5.1	10.7	9.9
Other white oaks	110.1		36.5	32.5	20.7	9.1	5.0	6.2	...
Other red oaks	181.3		40.4	37.8	37.5	22.3	17.1	23.7	2.5
Hickory	73.1		18.9	22.8	13.5	8.4	3.0	4.6	1.9
Hard maple	1.4		0.3	0.6	0.4		.		...
Soft maple	20.4		1.4	3.5	2.6	3.7	2.5	5.2	1.6
Sweetgum	17.5		5.8	3.8	4.2	1.8	0.4	1.3	0.1
Tupeloblackgum	10.5		1.5	2.9	3.3	1.1	1.5	0.2	...
Ash	31.6		8.7	5.9	7.3	4.2	3.1	2.5	..
Cottonwood-aspen	33.6		2.0	6.1	2.2	0.4	1.3	19.8	1.8
Basswood	0.2		0.2				..		..
Black walnut	4.8		0.3	1.7	0.7	0.3	0.5	1.1	
Other hardwoods	68.3		19.0	16.9	10.2	8.6	4.3	8.5	0.9
Total hardwoods	659.9		158.8	153.9	116.6	74.2	48.4	89.0	19.1
All species	1.378.4	215.8	354.9	298.5	197.9	119.0	67.8	104.0	20.5

Table 14.—*Volume of sawtimber on timberland by species and diameter class, east Oklahoma counties. I993*

Species	All classes	Diameter class *(Inches at breast height)* 9.0-10.9	11.0-12.9	13.0-14.9	15.0-16.9	17.0-18.9	19.0-20.9	21.0-28.9	≥29.0
	Million board feet								
Shortleaf-loblolly pines	4,097.5	1,097.3	1,105.1	857.9	510.6	292.8	126.5	102.5	4.7
Cypress	11.5	0.8		4.1	...	1.4	1.0	...	4.2
Other softwoods	52.2	11.9	14.9	13.0	7.3	2.2	2.3	0.8	
Total softwoods	4,161.2	1,110.1	1,120.0	875.0	517.9	296.4	129.8	103.3	8.9
Select white oaks	241.0	..	68.5	39.4	43.4	24.4	29.6	33.8	2.0
Select red oaks	407.4		64.0	72.4	41.2	62.0	32.3	70.7	65.0
Other white oaks	636.3		197.7	186.4	125.5	54.8	30.8	41.0	
Other red oaks	1,057.7		214.8	213.7	221.4	137.4	106.8	149.7	13.8
Hickory	420.8		102.0	133.0	78.8	49.3	19.4	27.2	11.0
Hard maple	8.2		1.9	3.5	2.8		...	...	
Soft maple	113.9		7.0	19.7	14.8	20.5	15.0	30.8	6.0
Sweetgum	100.4		32.1	21.7	25.1	10.3	3.0	7.8	0.6
Tupelo–blackgum	60.4		8.0	16.9	18.6	7.2	8.7	1.0	
Ash	175.5		46.9	32.7	40.0	24.1	17.3	14.6	
Cottonwood-aspen	206.6		10.8	32.7	14.1	2.4	7.3	129.2	10.1
Basswood	1.3						...	..	.
Black walnut	30.0	.	1.3	10.5	4.6	2.2	3.3	7.8	
Other hardwoods	391.0		103.4	98.1	56.6	51.1	26.7	50.1	5.0
Total hardwoods	3,850.3		859.9	880.7	686.8	445.7	300.2	563.6	113.5
All species	8,011.6	1,110.1	1,979.8	1,755.7	1,204.7	742.1	430.0	666.9	122.3

Table 15.—*Volume of growing stock and sawtimber on timberland by county and species group, east Oklahoma counties, 1993*

County	Growing stock: All species	Softwood: Pine: Planted	Softwood: Pine: Natural	Softwood: Other	Hardwood: Soft*	Hardwood: Hard†	Sawtimber: All species	Softwood: Pine: Planted	Softwood: Pine: Natural	Softwood: Other	Hardwood: Soft*	Hardwood: Hard†
	Million cubic feet						*Million board feet*					
Adair	141.3		10.5		9.1	121.7	419.6		38.8		38.4	342.4
Atoka	140.8		49.9	0.5	16.4	74.0	415.9		158.7	1.0	29.3	226.9
Bryan	51.5			1.1	14.2	36.2	137.1			0.9	49.8	86.4
Cherokee	170.9		17.0	.	31.1	122.8	516.7		62.8		99.1	354.7
Choctaw	97.8	10.8	15.7	5.9	15.6	49.9	300.2	45.7	47.7	25.5	32.5	148.9
Coal	25.3			0.2	6.7	18.4	87.4				16.8	70.6
Delaware	82.5	.	4.7	0.5	5.5	71.8	225.2		15.3		15.5	194.4
Haskell	100.5		22.4	0.8	35.0	42.2	312.9		66.3	2.2	161.9	82.5
Latimer	157.0		106.4	2.4	1.9	46.3	407.4		357.1	1.0		49.3
Le Flore	509.6	54.4	240.6	5.1	46.5	163.0	1,286.0	46.3	860.7	6.5	113.7	258.9
McCurtain	662.9	223.9	203.2	3.3	46.7	185.8	1.769.7	351.0	832.6	11.5	126.7	448.0
McIntosh	45.1			1.4	12.2	31.5	117.1	.	...		25.1	92.1
Mayes	78.6		8.0		14.1	56.5	236.9	...	26.5		50.2	160.1
Muskogee	72.1		0.4		18.1	53.6	134.0	...	2.1		40.3	91.6
Ottawa	20.7		...		0.5	20.2	66.7		...	.	0.7	66.0
Pittsburg	54.1		23.5	1.3	4.2	25.1	166.9		70.6	1.3	11.0	84.0
Pushmataha	513.9	54.2	313.0	6.4	13.9	126.4	1,264.9	8.5	1,073.2	12.4	28.0	132.8
Sequoyah	76.7		6.1	1.2	10.4	59.0	146.9	..	23.7	1.5	17.4	104.3
All counties	3,001.5	343.2	1,021.4	30.2	302.2	1,304.5	8,011.6	461.5	3,636.0	63.8	856.5	2,993.8

*Hardwood species with an average specific gravity of 0.50 or less such as gums, yellow-poplar, cottonwood, red maple, basswood, aspen, and willow.
†Hardwood species with an average specific gravity greater than 0.50 such as oaks, hard maple, hickories, and green and white ash.

Table 16.—*Volume of timber on timberland by class of timber and species group, east Oklahoma counties. 1993*

Class of timber	All species	Softwood			Hardwood	
		Pine				
		Planted	Natural	Other	Soft'	Hard+
	Million cubic feet					
Sawtimber trees						
Sawlog portion	1,378.4	85.1	621.0	12.4	147.4	512.5
Upper-stem portion	270.2	17.1	107.6	2.2	28.5	114.7
Total	1,648.6	102.2	728.6	14.7	175.9	627.2
Poletimber trees	1,352.9	241.0	292.7	15.5	126.3	677.3
All growing-stock trees	3,001.5	343.2	1,021.4	30.2	302.2	1,304.5
Rough trees						
Sawtimber size	417.0	4.7	11.6	1.4	42.7	356.5
Poletimber size	366.6	8.0	7.3	1.7	64.7	284.9
Total	783.5	12.7	18.9	3.1	107.4	641.4
Rotten trees						
Sawtimber size	108.4		1.3	0.2	11.2	95.8
Poletimber size	20.0		0.2		3.0	16.8
Total	128.3		1.4	0.2	14.2	112.6
Salvable dead trees						
Sawtimber size	9.6	0.7	2.9		1.9	4.2
Poletimber size	3.3		0.7		0.4	2.2
Total	12.9	0.7	3.6	.	2.3	6.4
All classes	3,926.3	356.6	1,045.2	33.5	426.1	2,064.9

*Hardwood species with an average specific gravity of 0.50 or less such as gums, yellow-poplar, cottonwood, red maple, basswood, aspen, and willow.

†Hardwood species with an average specific gravity greater than 0.50 such as oaks, hard maple, hickories, and green and white ash.

Table 17.—*Volume of live trees and growing stock on timberland by ownership class and species group, east Oklahoma counties, 1993*

Ownership class	Live trees						Growing stock					
		Softwood			Hardwood			Softwood			Hardwood	
		Pine						Pine				
	All species	Planted	Natural	Other	Soft'	Hard†	All species	Planted	Natural	Other	Soft'	Hard+
	Million cubic feet											
National forest	328.3	24.6	204.9	3.7	12.5	82.6	294.2	24.6	200.4	3.4	7.2	58.6
Other public	300.0		72.9	3.2	57.8	166.2	224.9	...	69.5	3.0	48.2	104.1
Forest industry	831.3	303.5	283.9	3.9	31.6	208.4	747.5	291.1	279.5	3.4	20.6	152.8
Other private	2,453.7	27.9	480.0	22.6	322.0	1,601.2	1,734.9	27.5	471.8	20.4	226.2	989.0
All ownerships	3,913.3	356.0	1,041.7	33.5	423.8	2,058.4	3,001.5	343.2	1,021.4	30.2	302.2	1,304.5

*Hardwood species with an average specific gravity of 0.50 or less such as gums, yellow-poplar, cottonwood, red maple, basswood, aspen, and willow.

†Hardwood species with an average specific gravity greater than 0.50 such as oaks, hard maple, hickories, and green and white ash.

Table 18.—*Average net annual growth of growing stock and sawtimber on timberland by county and species group, east Oklahoma counties, 1986–1993*

County	Growing stock						Sawtimber					
		Softwood			Hardwood			Softwood			Hardwood	
		Pine						Pine				
	All species	Planted	Natural	Other	Soft*	Hard†	All species	Planted	Natural	Other	Soft*	Hard†
	Million cubic feet						*Million board feet*					
Adair	0.3		0.8		–0.1	–0.4	7.8		3.7		0.6	3.5
Atoka	10.2		3.4	0.1	1.0	5.7	33.6		8.9	0.2	2.5	22.0
Bryan	3.2			0.2	0.8	2.2	8.2			0.2	2.5	5.6
Cherokee	5.8		0.8	...	0.7	4.3	18.3		2.9	...	2.5	12.9
Choctaw	4.3		1.4	0.4	0.9	1.6	14.3		5.6	2.4	2.2	4.1
coat	1.1				0.3	0.7	2.4				0.8	1.6
Delaware	4.x		0.4		0.5	3.8	14.0		0.7		1.4	11.8
Haskell	3.h		1.4	0.1	–0.5	2.6	–0.7		3.7	0.4	-7.5	2.7
Latimer	7.3		6.1			1.2	20.9		23.1	0.2		-2.4
Le Flore	28.6	6.1	13.5	0.4	2.5	6.0	82.2	5.3	55.7	0.4	9.3	11.5
McCurtain	52.0	30.3	12.2	0.2	1.1	x.3	111.4	38.2	46.2	0.7	1.9	24.3
McIntosh	1.4			0.2	–0.3	t.5	6.8				-1.4	8.2
Mayes	6.0		0.4		0.7	4.9	16.3		t.7		1.2	13.4
Muskogee	4.0				1.4	3.6	Il.5		0.2		3.8	7.5
Ottawa	1.3					1.3	5.2				0.1	5.1
Pittsburg	1.6		0.9	0.2	0.2	0.3	4.9		2.6	0.2		2.0
Pushmataha	35.9	X.0	21.1	0.4	0.7	s.7	85.3	2.2	80.4	0.3	1.6	0.9
Sequoyah	3.4		0.1	0. t	0.6	2.6	5.0		0.7	0.2		4.0
All counties	175.6	44.4	62.5	2.5	10.4	55.8	447.3	45.7	236.2	5.1	21.5	138.8

'Hardwood species with an average specific gravity of 0.50 or less such as gums, yellow-poplar, cottonwood, red maple, basswood, aspen, and willow.
†Hardwood species with an average specific gravity greater than 0.50 such as oaks. hard maple, hickories, and green and while ash.

Table19.—*Average annual removals of growing stock and sawtimber on timberland by county and species group, east Oklahoma counties, 1986–1993*

County	Growing stock						Sawtimber					
		Softwood			Hardwood			Sotiwood			Hardwood	
		Pine						Pine				
	All species	Planted	Natural	Other	Soft*	Hard†	All species	Planted	Natural	Other	Soft*	Hard†
	Million cubic feet						*Million board feet*					
Adair	4.7		1.9		0.2	2.7	16.2		8.8		0.6	6.8
Atoka	4 . 0		2.8		0.1	2.0	Il.8	...	7.5		0.5	3.8
Bryan	1.3				0.3	1.0	7.3			...	1.7	S.6
Cherokee	4.3		0.1		0. t	4. t	10.7		0.3	...	0.2	10.2
Choctaw	1.9		0.6		0.3	0.9	73		2.5	0.1	0.9	3.x
Coal	0.3					0.3	1.Y					1.9
Delaware	0 . 4		0.1			0.3	1.7		0.6			1.1
Haskell	0.3				0.1	0.3	1.2				0.3	0.8
Latimer	3 . 4		2.8		0.1	0.5	12.6		11.6	...		1.0
Le Flore	9.8		7.3	0.1	0.3	2.2	33.3		27.9	...		5.4
McCurtain	29.1	4.8	16.5		0.9	6.8	98.7	4.6	71.6	...	1.6	20.8
McIntosh	0.1					0.1						
Mayes	0.1					0. t	0.2	...				0.2
Muskogee	1.o				0.2	0.9	2.6				0.8	1.8
Ottawa	0.6					0.6	3.4			...		3.4
Pittsburg	0.8		0.4			0.4	4.0		2.0	...	.	2.0
Pushmataha	19.6	0.3	17.5		0.4	1.4	84.4		80.3		1.0	3.1
Sequoyah	0.3					0.3	0.5					0.5
All counties	X3.0	5.2	49.9	0.t	2.9	24.9	297.8	4.6	213.1	0.1	7.6	72.4

'Hardwood species with an average specific gravity of 0.50 or less such as gums, yellow-poplar, cottonwood, red maple, basswood, aspen, and willow.
†Hardwood species with an average specific gravity greater than 0.50 such as oaks. hard maple, hickories. and green and white ash.

Table 20.—*Average net annual growth and average annual removals of growing stock on timberland by species, east Oklahoma counties, 1986-1993*

Species	Growth	Removals
	– – – – Million cubic feet – – – –	
Yellow pines	106.9	55.0
Other softwoods	2.5	0.1
Total softwoods	109.3	55.1
Select white-red oaks	7.9	4.5
Other white-red oaks	34.1	15.3
Hickory	8.0	3.7
Hard maple	0.2	0.1
Sweetgum	1.5	0.7
Ash-walnut-black cherry	5.0	1.0
Other hardwoods	9.7	2.5
Total hardwoods	66.3	27.8
All species	175.6	83.0

Table 2 1 .-*Average net annual growth and average annual removals of sawtimber on timberland by species, east Oklahoma counties. 19861993*

Species	Growth	Removals
	– – – Million board feet – – – –	
Yellow pines	281.9	217.7
Other softwoods	5.1	0.1
Total softwoods	*287.0*	*217.8*
Select white-red oaks	*29.0*	*13.5*
Other white-red oaks	*79.6*	*44.4*
Hickory	*20.0*	*10.2*
Hard maple	*0.2*	*0.3*
Sweetgum	*4.2*	*2.0*
Ash-walnut-black cherry	*9.0*	*3.3*
Other hardwoods	*18.3*	*6.3*
Total hardwoods	160.3	*80.0*
All species	*447.3*	*297.8*

Table 22.—*Average annual mortality of growing stock and sawtimber on timberland by species, east Oklahoma counties, 19861993*

Species	Growing stock	Sawtimber
	Million cubic feet	*Million board feet*
Yellow pines	3.2	10.6
Total softwoods	3.2	10.6
Select white-red oaks	0.7	1.6
Other white-red oaks	4.1	10.1
Hickory	0.8	1.8
Sweetgum	0.2	0.6
Ash-walnut-black cherry	0.8	3.6
Other hardwoods	4.0	16.2
Total hardwoods	10.6	33.9
All species	13.9	44.5

Table 23.—*Average net annual growth and average annual removals of growing stock on timberland by ownership class and species group, east Oklahoma counties, 19861993*

Ownership class	Growth						Removals					
		Softwood			Hardwood			Softwood			Hardwood	
		Pine						Pine				
	All species	Planted	Natural	Other	Soft'	Hard†	All species	Planted	Natural	Other	Soft'	Hard†
	Million cubic feet											
National forest	9.2	0.7	9.0	0.2	–0.5	-0.2	7.6	...	6.4		...	1.1
Other public	8.5		2.7	0.1	0.5	5.3	1.3		0.1		0.1	1.1
Forest industry	68.4	41.5	20.1	0.1	0.6	6.1	29.3	4.9	22.4		0.4	1.7
Other private	89.5	2.1	30.7	2.0	9.9	44.7	44.7	0.3	20.9	0.1	2.4	21.0
All ownerships	175.6	44.4	62.5	2.5	10.4	55.8	83.0	5.2	49.9	0.1	2.9	24.9

*Hardwood species with an average specific gravity of 0.50 or less such as gums, yellow-poplar, cottonwood, red maple, basswood, aspen, and willow.
†Hardwood species with an average specific gravity greater than 0.50 such as oaks, hard maple, hickories, and green and white ash.

Table *24.-Average net annual growth and average annual removals of sawtimber on timberland by ownership class and species group, east Oklahoma counties. 1986–1993*

Ownership class	Growth						Removals					
		Softwood			Hardwood			Softwood			Hardwood	
		Pine						Pine				
	All species	Planted	Natural	Other	Soft'	Hard†	All species	Planted	Natural	Other	Soft'	Hard†
	Million board feet											
National forest	58.9	4.1	48.6	0.3	0.5	5.4	28.7	0.2	25.6		...	2.9
Other public	17.8	...	11.1	0.4	-4.8	11.1	1.8		0.3	...	0.2	1.3
Forest industry	110.7	37.5	66.8		–0.2	6.7	103.8	3.0	97.3		0.3	3.2
Other private	259.9	4.1	109.7	4.5	26.1	115.6	163.5	1.5	89.8	0.1	7.1	64.9
All ownerships	441.3	45.7	236.2	5.1	21.5	138.8	297.8	4.6	213.1	0.1	7.6	72.4

*Hardwood species with an average specific gravity of 0.50 or less such as gums, yellow-poplar, cottonwood, red maple, basswood, aspen, and willow.
'Hardwood species with an average specific gravity greater than 0.50 such as oaks, hard maple, hickories, and green and white ash.

Table *25.-Volume of sawtimber on timberland by species and tree grade, east Oklahoma counties, 1993*

Species	All grades	Grade 1	Grade 2	Grade 3	Grade 4	Grade 5
	Million board feet					
Yellow pines	4,097.5	663.6	804.5	2,593.9		35.5
Cypress	11.5		3.2	4.9		3.3
Redcedar	52.2	47.4				4.8
Total softwoods	4,161.2	711.1	807.8	2,598.8		43.6
Select white-red oaks	648.4	124.4	117.3	263.9	109.9	32.9
Other white-red oaks	1,694.0	100.2	236.2	697.0	558.0	102.6
Hickory	420.8	21.5	77.4	139.8	137.7	44.4
Hard maple	8.2			3.5	4.7	
Sweetgum	100.4	2.6	21.2	54.0	11.7	10.9
Tupelo and blackgum	60.4		21.2	19.7	12.6	1.0
Ash-walnut-black cherry	215.6	51.3	12.3	56.8	4.6	30.6
Other hardwoods	702.5	217.6	148.6	205.9	65.0	65.3
Total hardwoods	3,850.3	517.6	700.2	1440.6	904.2	287.7
All species	8,011.6	1,228.7	1,507.9	4,039.4	904.2	331.3

Supplemental Tables 26 through 43

Table 26.—*Area of timberland by stand age, forest type group, and stand origin, east Oklahoma counties, 1993*

Stand age class	Pine		Oak-pine		Other hardwood types	
	Planted	Natural	Planted	Natural	Planted	Natural
Years			*Thousand acres*			
1–10	111.3	5.8	40.4		16.7	75.7
II-20	273.2	5.6	22.7		11.1	
21-30	46.9	5.6				
31–40	1.9	1.9				
41-50						
>50						
Mixed	40.9	605.5	33.9	605.2	11.1	2.980.0
Total	474.3	624.3	97.0	605.2	38.9	3.055.7

Table 27.—*Volume of softwood growing stock on timberland by county and forest type group, cast Oklahoma counties, 1993*

County	Total	Forest type group					
		Loblolly-shortleaf pine		Oak–pine	Oak–hickory	Oak–gum–cypress	Elm–ash–cottonwood
		Planted	Natural				
		Million cubic feet					
Adair	10.5		4.9		5.6		
Atoka	50.4		40.7	9.5	0.2		
Bryan	1.1				1.1		
Cherokee	17.0		10.1	3.6	3.3		
Choctaw	32.3	10.8	11.1	4.9	5.6		
Coal	0.2				0.2		
Delaware	5.2			1.6	3.6		
Haskell	23.3		5.2	15.7	2.1	0.2	
Latimer	108.X		69.1	34.5	5.3		
Le Flore	300.1	5 1.4	162.9	53.6	32.2		
McCurtain	430.4	204.0	13 1 .o	63.7	26.8	4.9	
McIntosh	1.4				1 .0		0.4
Mayes	8 0		8.0				
Muskogee	0.4				0.4		
Ottawa							
Pittsburg	24.X		13.2	8.3	3.3		
Pushmataha	373.6	51.5	219.9	87.8	14.4		
Sequoyah	7.3			6.1	1.2		
All counties	1,394.8	317.7	676.2	289.2	106.2	5.1	0.4

Table 28.—*Volume of hardwood growing stock on timberland by county andforest type group. east Oklahoma counties, I993*

County	Total	Forest type group					
		Loblolly–shortleaf pine		Oak–pine	Oak–hickory	Oak-gum-cypress	Elm–ash–cottonwood
		Planted	Natural				
	Million cubic feet						
Adair	130.9		0.5		130.4	.	
Atoka	90.5		3.5	0.9	40.3	40.0	5.7
Bryan	50.4				32.4	17.6	0.4
Cherokee	153.9			2.2	109.3	28.1	14.3
Choctaw	65.5		2.6	1.3	48.0	13.6	
Coal	25.1				3.6	21.5	
Delaware	77.3				77.3		
Haskell	17.2		1.1	5.9	23.0	21.9	25.3
Latimer	48.2		6.2	14.5	21.8	5.6	
Le Flore	209.5	2.4	14.8	17.0	126.5	36.3	12.6
McCurtain	232.5	3.1	24.1	33.3	118.6	46.9	6.5
McIntosh	43.7				25.8	7.1	10.8
Mayes	70.6		0.8		54.8	15.0	
Muskogee	71.8				66.0	5.8	
Ottawa	20.7				20.7		
Pittsburg	29.3		0.1	0.6	17.4	11.2	
Pushmataha	140.3	0.6	29.7	37.8	64.2	8.0	
Sequoyah	69.4			3.2	55.3	8.2	2.8
All counties	1606.7	6.1	83.4	116.7	1,035.1	286.9	78.4

Table 29.—*Volume of softwood growing stock in the sawlog portion of sawtimber trees on timberland by forest type group. east Oklahoma counties. 1993*

County	Total	Forest type group				
		Loblolly–shortleaf pine		Oak–pine	Oak–hickory	Oak-gum-cypress
		Planted	Natural			
	Million cubic feet					
Adair	7.0		3.3		3.1	
Atoka	28.7		24.0	4.8		
Bryan	0.2				0.2	
Cherokee	10.6		7.1	1.1	2.4	
Choctaw	20.9	8.0	5.6	4.2	3.2	
Coal						
Delaware	2.5				2.5	
Haskell	12.0		4.0	7.0	1.0	
Latimer	63.9		39.0	21.5	3.4	
Le Flore	156.2	8.4	99.7	30.1	18.1	
McCurtain	203.1	57.5	88.7	35.9	17.3	3.7
McIntosh						
Mayes	5.0		5.0			
Muskogee	0.3				0.3	
Ottawa						
Pittsburg	13.4		6.8	5.2	1.5	
Pushmataha	189.9	3.6	128.9	50.0	7.4	
Sequoyah	4.6			4.3	0.3	
All counties	718.5	71.4	412.1	164.0	61.2	3.7

Table 30.-Volume of hardwood growing stock in the sawlog portion of saw timber trees on timberland by forest type group, east Oklahoma counties, 1993

County	Total	Forest type group					
		Loblolly-shortleaf pine		Oak–pine	Oak–hickory	Oak–gum–cypress	Elm-ash cottonwood
		Planted	Natural				
		Million cubic feet					
Adair	67.0				67.0		
Atoka	43.8		2.2		14.7	25.5	1.3
Bryan	23.3				14.5	8.7	0.2
Cherokee	75.7			1.0	44.7	20.8	9.2
Choctaw	32.3		1.0	1.1	23.0	7.2	
Coal	15.5				0.9	14.5	
Delaware	35.4				35.4		
Haskell	39.6		0.5	1.3	3.0	11.4	23.3
Latimer	8.4		1.5	0.9	3.0	3.0	
Le Flore	64.3	0.9	3.5	4.8	32.4	15.3	7.5
McCurtain	98.9	0.9	8.6	14.7	44.8	28.1	1.7
McIntosh	20.0				11.6	2.8	5.6
Mayes	36.1		0.3		26.3	9.6	
Muskogee	22.3				19.3	3.0	
Ottawa	11.2				11.2		
Pittsburg	17.1			0.3	8.9	7.9	
Pushmataha	27.5	0.2	6.4	5.4	12.0	3.4	
Sequoyah	21.3			0.5	15.7	4.8	0.2
All counties	659.9	2.0	24.1	30.0	388.7	166.0	49.1

Table 31 .-Volume of timber on timberland by county, class of timber; and species group. east Oklahoma counties, 1993

County	All classes	Growing stock		Rough		Rotten	
		Softwood	Hardwood	Softwood	Hardwood	Softwood	Hardwood
	Million cubic feet						
Adair	221.7	10.5	130.9		73.8		6.5
Atoka	193.6	50.4	90.5	1.6	44.1	0.5	6.5
Bryan	99.1	1.1	50.4	0.6	43.4		3.6
Cherokee	228.7	17.0	153.9	0.3	52.4	0.1	5.0
Choctaw	131.5	32.3	65.5	0.2	27.8	0.2	5.6
Coal	47.7	0.2	25.1		19.5		2.9
Delaware	137.1	5.2	77.3	0.3	33.5		20.7
Haskell	132.1	23.3	77.2		29.2		2.4
Latimer	211.1	108.8	48.2	1.8	44.9	0.2	1.2
Le Flore	630.8	300.1	209.5	7.8	101.2	0.3	11.9
McCurtain	728.6	430.4	232.5	13.3	43.8		8.7
McIntosh	15.5	1.4	43.7		26.5		3.9
Mayes	124.0	8.0	70.6	0.5	21.6		17.3
Muskogee	97.1	0.4	71.8		23.7		1.3
Ottawa	32.1		20.7		7.7		3.1
Pittsburg	87.1	24.8	29.3	0.5	28.2	0.2	4.2
Pushmataha	619.9	373.6	140.3	7.8	88.1		10.1
Sequoyah	115.6	1.3	69.4		33.5	0.1	5.3
All counties	3,913.3	1,394.8	1,606.7	34.7	748.8	1.6	126.7

Table 32.—*Number of live trees on* timberland *by* derailed *species and* diameter *class. east Oklahoma counties,* 1993

Species	All classes	Diameter class *(Inches at breast* height) 1.0– 2.9	3.0- 4.9	5.& 6.9	7.0- 8.9	9.0- 10.9	11.0– 12.9	13.0– 14.9	15.0– 16.9	17.0- 18.9	19.0- 20.9	21.0– 28.9	≥29.0
	Thousand trees												
Shortleaf pine	434,116	204,199	97.54 1	53,651	34,100	20,592	12,756	6,810	2,769	1,217	390	90	
Loblolly pine	166,857	31.615	33,233	57,953	34,435	6,998	1.360	685	281	116	76	98	9
Redcedar	74,755	47,481	18,667	5,820	1,791	449	331	120	67	12	9	8	
Cypress	245			99		82		39	.	12	9	.	4
Total softwoods	675.973	283.295	149.441	117.523	70.326	28,121	14,447	7,654	3,117	1,356	485	196	13
Select white oaks	126,159	74,858	24,453	10,954	6.916	3,795	2,074	1,180	811	534	266	304	13
Select red oaks	63,095	36,007	10,332	5,267	4,596	2,396	1,478	1,225	609	515	215	343	112
Other white oaks	476,387	218,676	134,489	54,298	30,040	16,443	9,188	7,017	3,262	1,491	671	800	11
Other red oaks	242,655	145,698	40.677	19,935	12,225	7.962	5,848	3.88 1	2,898	1,557	897	976	102
Sweet pecan	4,093	596	1,164	770	436	226	318	213	62	95	74	102	35
Water hickory	3,643	2,549	510	375	63	46	28	25	17		25	5	
Other hickories	338,774	200.83 1	80,124	28,450	14.510	7,517	3.697	1,916	1,104	418	122	83	3
Persimmon	27,832	22,629	3,826	1,087	137	91	50				12		
Hard maple	8,992	7,059	1,204	100	293	115	42	122	33	17		8	
Soft maple	69.88 1	52,662	12.986	2,159	979	227	205	266	111	85	77	108	17
Boxelder	4,457	1,042	1,660	577	382	229	94	140	132	135	32	35	
Sweetgum	49,978	33,620	10,533	3,145	1,301	384	482	206	187	79	10	21	10
Blackgum	46,714	36,773	5,836	1,504	1,099	536	315	268	231	54	60	37	
White ash	25,162	13,816	5,401	2,178	1,673	800	562	261	216	106	69	80	
Other ashes	38,731	19,459	8,850	4,321	2,728	1,697	729	385	265	183	56	54	4
Sycamore	4,737	1,073	1,080	695	541	418	287	274	126	68	54	85	37
Cottonwood	7,797	2,176	2,719	1,355	257	492	172	323	65	15	20	189	15
Basswood	691	503			125		49		15				
Willow	3,993	1,578		712	778	601	190	25		66	12	31	
Black walnut	5,960	3,339	613	975	262	297	143	189	51	16	24	47	4
Black cherry	9,571	6,617	1,737	662	196	120	153	43	30	12			
American elm	33,039	22,858	5,773	1,740	1.473	358	332	294	100	57	21	22	11
Other elms	266.64 1	185,672	5 1,539	18.220	6,233	2,638	1,363	579	192	103	65	37	
River birch	2,992		1,530	738	215	273		22	107	54	9	45	
Hackberry	45,636	27,626	9,254	3,934	1,939	1,570	536	273	270	122	56	49	8
Black locust	5,281	3,699	1,027	340	214								
Other locusts	7.921	3,938	1,115	1.106	606	522	396	80	66	55		36	
Sassafras	33,647	3 1,408	1,227	680	232	79	20						
Dogwood	75,040	59,565	14,088	1,218	170								
Holly	5,464	4,861	534			36		20		12			
Other commercial	45,361	28,057	9,677	5,294	1,378	532	179	157	18	35	12	22	
Total hardwoods	2,080,325	1,249,244	443,960	172,788	91,996	50,400	28.930	19,387	10,978	5,883	2,857	3,519	382
Noncommercial	325,447	227,006	56,838	19,894	9,996	6,604	2,780	1,173	735	234	115	72	
All species	3,081,745	1,759,545	650,239	310,206	172,319	85,125	46,157	28.213	14,829	7,474	3,456	3,787	395

Table *33.-Number of growing-stock trees on timberland by detailed species and diameter class, east Oklahoma counties, 1993*

Species	All classes	Diameter class *(Inches at breast height)* 5.0– 6.9	7.0– 8.9	9.0– 10.9	11.0– 12.9	13.0- 14.9	15.0- 16.9	17.0– 18.9	19.0– 20.9	21.0– 28.9	≥29.0
	Thousand trees										
Shortleaf pine	127,077	50,422	33.341	20,032	12,379	6,638	2,668	1,149	358	90	
Loblolly pine	96,756	54,862	33,107	6,241	1,302	664	281	116	76	98	9
Redcedar	7,596	5,433	1,373	343	232	120	67	12	9	8	
Cypress	103			38		39		12	9		4
Total softwoods	231,532	110,717	67.821	26,654	13.913	7,461	3,016	1,289	452	196	13
Select white oaks	17.906	7,732	5,702	2,390	1.014	399	305	135	123	102	4
Select red oaks	11,890	3,979	3,500	1,527	1,017	776	329	317	147	197	99
Other white oaks	79,755	39.555	22.3 13	9.752	3,865	2,382	1.108	413	188	178	
Other red oaks	41,126	15,663	9,728	6,008	3,847	2,333	1,737	812	516	451	31
Sweet pecan	1,069	478	127	94	151	120	24		11	41	23
Water hickory	563	375	63	46	28	25	17		3	5	
Other hickories	34,865	17.901	8,583	4,393	1,703	1,313	591	291	59	29	3
Persimmon	798	577	137	44	27				12		
Hard maple	244	100		35	42	51	18				
Soft maple	2,232	1,070	549	45	121	160	66	58	57	92	13
Boxelder	568	206	142	39		20	75	71	9	7	
Sweetgum	4,641	2,324	1,068	350	447	206	155	56	10	21	3
Blackgum	2,427	1,051	645	234	120	158	133	42	41	2	
White ash	3,511	1,329	913	520	340	134	176	17	56	26	
Other ashes	6,374	2,168	1,937	1,258	484	197	139	119	45	27	
Sycamore	2,213	494	541	380	256	231	111	68	54	70	9
Cottonwood	2,262	845	257	366	172	323	65	15	20	189	10
Basswood	83		57		25						
Willow	1.751	461	492	519	156	25		66	12	19	
Black walnut	700	286		170	38	103	37	16	24	26	
Black cherry	374	119	57	76	65	43	15				
American elm	2,134	966	586	232	136	148		44		22	
Other elms	13,457	7,248	3,305	1.697	677	370	90	39	21	8	
River birch	891	552	74	154		22	34	26		29	
Hackberry	4,085	1,495	821	1.064	332	124	167	59	21		
Black locust	423	340	83								
Other locusts	1,248	637	338	114	91	43	14	10			
Sassafras	234	112	81	41							
Dogwood	185	185									
Other commercial	740	538	60	83	34	24					
Total hardwoods	238,746	108,786	- 6 2 , 1 5 9	31.633	IS.188	9.73 1	5,408	2,673	1,430	1,542	196
All species	470,278	219,502	129,980	58,287	29,101	17,192	8,424	3,962	1,883	1,737	209

Table 34.—*Volume* of *growing stock on timberland by detailed species and diameter class, east Oklahoma counties, 1993*

Species	All classes	Diameter class *(Inches at breast height)* 5.0–6.9	7.0–8.9	9.0–10.9	11.0–12.9	13.0-14.9	15.&16.9	17.0–18.9	19.0–20.9	21.0–28.9	≥29.0
		Million cubic feet									
Shortleaf pine	1,014.5	117.5	186.5	210.7	204.5	146.3	80.8	44.6	17.2	6.4	
Loblolly pine	350.1	102.5	127.3	47.6	18.5	19.4	11.9	6.7	4.9	10.4	1.0
Redcedar	27.1	10.2	5.3	3.1	3.4	2.6	1.4	0.4	0.5	0.2	
Cypress	3.1			0.3		0.9		0.3	0.4	.	1.2
Total softwoods	1,394.8	230.2	319.1	261.6	226.5	169.2	94.1	52.1	22.9	17.0	2.2
Select white oaks	126.5	20.3	31.5	24.3	16.6	8.4	***8.6***	4.7	5.4	6.1	0.4
Select red oaks	123.3	10.9	18.2	14.4	15.4	15.8	***8.9***	11.3	5.9	11.8	10.8
Other white oaks	394.1	85.7	99.5	73.5	45.8	39.8	***25.1***	10.9	6.1	7.6	
Other red oaks	355.3	34.3	47.8	51.6	52.8	46.0	***44.7***	27.7	20.6	27.1	2.7
Sweet pecan	11.8	1.1	0.9	1.0	1.7	2.0	***0.8***		0.4	2.3	1.6
Water hickory	3.8	0.8	0.3	0.3	0.5	0.6	***0.4***		0.2	0.5	
Other hickories	183.4	33.3	36.7	36.4	21.9	24.8	***15.0***	10.0	2.1	2.2	0.4
Persimmon	3.5	1.5	0.6	0.2	0.5				0.6		
Hard maple	2.6	0.3		0.5	0.5	0.8	***0.5***				
Soft maple	27.4	2.7	3.6	0.6	2.1	4.2	***1.6***	2.4	2.7	5.9	1.6
Boxelder	7.7	0.7	0.9	0.7		0.4	***1.9***	2.2	0.5	0.4	
Sweetgum	36.6	5.6	5.1	3.5	7.9	4.8	***4.9***	2.1	0.5	1.5	0.1
Blackgum	19.2	2.3	2.9	2.1	1.7	3.4	***3.8***	1.3	1.7	0.2	
White ash	29.4	3.2	5.0	4.6	4.5	3.1	***5.2***	0.4	1.8	1.5	
Other ashes	52.6	5.4	11.0	13.5	7.4	4.1	***3.6***	4.4	1.7	1.4	
Sycamore	35.4	1.6	4.6	3.1	3.8	6.6	***3.6***	2.1	2.6	5.3	0.9
cottonwood	42.5	1.2	1.2	3.1	3.0	1.4	***2.6***	0.5	1.3	20.4	1.8
Basswood	0.7		0.3		0.4						
Willow	12.1	1.1	2.2	3.8	1.9	0.3		1.8	0.3	0.7	
Black walnut	8.5	0.6		1.4	0.3	2.4	1.1	0.7	0.5	1.5	
Black cherry	3.5	0.3	0.3	0.7	1.1	0.7	0.5				
American elm	14.0	1.9	2.3	2.8	2.1	2.5		1.2		1.2	
Other elms	64.3	14.7	14.8	14.5	9.6	6.3	1.9	1.1	0.9	0.4	
River birch	7.2	1.4	0.3	1.6		0.5	0.8	0.9		1.6	
Hackberry	29.7	2.1	3.6	8.5	4.6	3.1	4.6	1.9	0.7		.
Black locust	0.9	0.6	0.3								
Other locusts	6.2	1.2	1.5	1.1	1.2	0.6	0.4	0.3			
Sassafras	1.0	0.3	0.3	0.4							
Dogwood	0.4	0.4									
Other commercial	3.1	1.0	0.4	0.8	0.4	0.4					
Total hardwoods	1,606.7	237.1	296.7	269.7	207.7	189.1	140.4	88.6	57.4	99.7	20.3
All species	3,001.5	467.3	615.8	531.4	434.2	358.3	234.5	140.7	80.3	116.6	22.4

Table 35.—*Volume of grow ing stock in the sawlog portion of sawtimber trees on timberland by detailed species and diameter class, east Oklahoma counties, 1993*

Species	All classes	Diameter class (Inches *at breast height)* 9.0-10.9	11.&12.9	13.0–14.9	15.0–16.9	17.G 18.9	19.0-20.9	21.0-28.9	≥29.0
	Million cubic feet								
Shortleaf pine	604.5	176.2	177.4	123.9	69.3	38.1	14.2	5.5	
Loblolly pine	101.6	37.0	15.8	17.6	10.6	6.0	4.4	9.3	0.9
Redcedar	10.3	2.5	2.9	2.5	1.4	0.4	0.5	0.2	
Cypress	2.1	0.2		0.8	…	0.3	0.3	.	0.5
Total softwoods	718.5	215.8	196.1	144.7	81.3	44.8	19.4	15.0	1.4
Select white oaks	40.2		12.1	7.0	7.1	4.0	4.5	5.1	0.4
Select red oaks	66.9		11.6	12.4	6.9	10.2	5.1	10.7	9.9
Other white oaks	110.1		36.5	32.5	20.7	9.1	5.0	6.2	.
Other red oaks	181.3		40.4	37.8	37.5	22.3	17.1	23.7	2.5
Sweet pecan	7.5		1.2	1.7	0.6	.	0.3	2.1	1.6
Water hickory	2.0		0.4	0.6	0.3		0.2	0.5	
Other hickories	63.6		17.3	20.6	12.5	8.4	2.4	2.0	0.4
Persimmon	0.8		0.4				0.4		
Hard maple	1.4		0.3	0.6	0.4		.		
Soft maple	16.4		1.4	3.2	1.2	1.9	2.1	5.0	1.6
Boxelder	4.0			0.3	1.5	1.7	0.3	0.2	
Sweetgum	17.5		5.8	3.8	4.2	1.8	0.4	1.3	0.1
Blackgum	10.5		1.5	2.9	3.3	1.1	1.5	0.2	
White ash	13.1		3.3	2.4	4.1	0.4	1.6	1.4	.
Other ashes	18.5		5.5	3.4	3.2	3.8	1.4	1.1	…
Sycamore	22.4	.	3.2	5.4	3.3	2.4	2.3	4.9	0.9
Cottonwood	33.6		2.0	6.1	2.2	0.4	1.3	19.8	1.8
Basswood	0.2	.	0.2	.	…	.		.	
Willow	4.3		1.3	0.3		1.7	0.3	0.7	
Black walnut	4.8		0.3	1.7	0.7	0.3	0.5	1.1	
Black cherry	1.9		1.0	0.6	0.4				
American elm	5.6		1.6	2.2		0.9		0.9	
Other elms	16.2		7.3	5.1	1.6	1.0	0.8	0.4	.
River birch	3.6			0.4	0.8	0.9	.	1.6	
Hackberry	11.1		3.2	2.1	3.7	1.5	0.6		
Other locusts	1.9	.	0.8	0.5	0.4	0.2	.		.
Other commercial	0.5		0.2	0.3		.	.		
Total hardwoods	659.9		158.8	153.9	116.6	74.2	48.4	89.0	19.1
All species	1,378.4	215.8	354.9	298.5	197.9	119.0	67.8	104.0	20.5

Table 36.—*Volume of live trees on timberland by detailed species and class of timber, east Oklahoma counties, 1993*

Species	All live	Growing stock	Rough	Rotten
	Million cubic feet			
Shortleaf pine	1,035.0	1,014.5	19.1	1.4
Loblolly pine	362.6	350.1	12.5	
Redcedar	30.0	27.1	2.7	0.2
cypress	3.5	3.1	0.4	
Total softwoods	1.431.1	1.394.8	34.7	1.6
Select white oaks	189.4	126.5	54.7	8.1
Select red oaks	158.1	123.3	25.3	9.4
Other white oaks	631.8	394.1	202.8	34.8
Other red oaks	481.5	355.3	87.2	39.0
Sweet pecan	23.0	11.8	10.7	0.5
Water hickory	4.1	3.8	...	0.3
Other hickories	264.1	183.4	68.0	12.7
Persimmon	4.5	3.5	0.9	0.1
Hard maple	5.9	2.6	2.8	0.5
Soft maple	34.8	27.4	5.6	1.7
Boxelder	16.8	7.7	8.2	0.9
Sweetgum	40.5	36.6	2.6	1.3
Blackgum	28.3	19.2	6.7	2.3
White ash	41.8	29.4	10.9	1.6
Other ashes	69.9	52.6	15.1	2.2
Sycamore	41.9	35.4	5.4	1.1
Cottonwood	44.4	42.5	1.6	0.2
Basswood	1.2	0.7	0.4	0.2
Willow	14.1	12.1	1.8	0.2
Black walnut	13.7	8.5	4.5	0.7
Black cherry	5.8	3.5	1.8	0.5
American elm	24.2	14.0	8.6	1.6
Other *elms*	106.7	64.3	41.0	1.4
River birch	11.6	7.2	3.6	0.8
Hackberry	48.5	29.7	17.0	1.9
Black locust	1.1	0.9		0.2
Other locusts	16.0	6.2	8.7	1.0
Sassafras	3.2	1.0	2.2	0.1
Dogwood	1.9	0.4	1.5	
Holly	0.7	...	0.5	0.2
Other commercial	16.5	3.1	12.2	1.2
Total hardwoods	2.345.8	1.606.7	612.4	126.7
Noncommercial	136.4	.	136.4	
All species	3,913.3	3,001.5	783.5	128.3

Table 37.—*Volume of sawtimber for tree grade I on timberland by detailed species and diameter class, east Oklahoma counties, 1993*

Species	All classes	Diameter class *(Inches at breast height)* 9.0-10.9	11.0-12.9	13.0-14.9	15.0-16.9	17.0-18.9	19.0-20.9	21.0-28.9	≥29.0
		Million board feet							
Shortleaf pine	561.7	93.3	122.1	144.3	113.2	60.6	20.2	13.4	
Loblolly pine	95.9		2.3	4.6	1.1	11.4	13.2	54.5	2.1
Redcedar	47.4	10.5	14.9	11.2	6.4	2.2	2.3		
Total softwoods	711.1	103.9	139.9	160.1	127.3	14.2	35.7	67.8	2.1
Select white oaks	29.1	. . . . .			4.8	4.2	5.5	13.5	1.0
Select red oaks	95.3	. . . . .			9.1	13.3	5.8	37.1	29.9
Other white oaks	36.1	. . . . .			8.1	6.7	8.7	12.7	...
Other red oaks	64.0	. . . . .			2.3	14.4	19.1	28.1	...
Sweet pecan	6.3							6.3	
Water hickory	4.5						1.0	3.4	
Other hickories	10.7				1.6		3.2	3.3	2.5
Persimmon	1.7						1.7	.	
Soft maple	17.4					2.8	3.6	11.0	
Sweetgum	2.6				2.6				
White ash	19.6				8.0		4.2	1.3	
Other ashes	21.7				1.4	12.9	2.5	4.9	
Sycamore	45.1					10.6	10.8	19.5	4.2
cottonwood	138.0						1.3	121.3	9.4
Willow	4.0					2.1	1.9		
Black walnut	10.1					2.2		7.8	
American elm	2.0	. . . . .						2.0	...
River birch	3.1	. . . . .			. . . . .			3.1	...
Hackberry	6.3				3.8		2.5		.
Total hardwoods	517.6				41.9	69.3	71.9	281.4	47.1
All species	1.228.7	103.9	139.9	160.1	169.2	143.6	113.6	349.2	49.2

Table 38.—*Volume* of *sawtimber for tree grade* 2 on *timberland by detailed species and diameter class. east Oklahoma counties, I993*

Species	All classes	Diameter class *(Inches at breast height)* 9.0-10.9	11.&12.9	13.0–14.9	15.0–16.9	17.0–18.9	19.0–20.9	21.0–28.9	≥29.0
	Million board feet								
Shortleaf pine	753.3	184.1	238.8	159.7	87.8	53.9	18.1	10.9	
Loblolly pine	51.2	4.0	5.7	13.7	6.2	7.1	7.0	7.4	.
Cypress	3.2			3.2	. .	. .	.		
Total softwoods	807.8	188.1	244.5	176.6	94.0	61.0	25.2	18.4	.
Select white oaks	44.4			10.1	17.5	5.0	2.1	9.8	
Select red oaks	72.9			16.2	14.1	6.4	11.8	13.4	11.0
Other white oaks	76.8			28.2	19.2	14.1	7.2	8.1	
Other red oaks	159.4			22.9	50.9	25.1	20.3	37.6	2.5
Sweet pecan	15.7			1.8	3.6		2.4	1.9	6.0
Other hickories	61.6			22.9	20.4	9.7	8.6		
Soft maple	26.2			15.5		3.4	4.3	3.0	.
Sweetgum	21.2			6.2	6.9	0.7	3.0	4.4	.
Blackgum	27.2			4.4	10.7	5.0	7.1		
White ash	29.1			12.4	14.3		2.4		
Other ashes	30.3			10.2	9.0	7.9	3.2		
Sycamore	43.4			24.9	16.5	2.1			
Cottonwood	26.4			10.1	11.2			5.2	
Willow	2.6					2.6		.	
Black walnut	9.3			4.7	4.6				
Black cherry	3.6			3.6					
American elm	1.7							1.7	.
Other elms	13.3			10.6	2.7				
River birch	12.4			2.5	3.6	3.0		3.3	
Hackberry	20.8			4.9	11.4	4.5			
Other commercial	1.8			1.8					
Total hardwoods	700.2			213.9	216.6	89.5	72.3	88.5	19.4
All species	1,507.9	188.1	244.5	390.5	310.5	150.5	97.5	106.8	19.4

Table 39.-Volume of *sawtimber for tree grade 3 on timberland by detailed species and diameter class, east Oklahoma counties, 1993*

Species	All classes	Diameter class *(Inches at breast height)* 9.0–10.9	11.0–12.9	13.0-14.9	15.0-16.9	17.0-18.9	19.0-20.9	21.0–28.9	529.0
	Million board feet								
Shortleaf pine	2,164.8	638.1	648.5	438.8	233.2	135.9	57.7	12.5	
Loblolly pine	429.1	171.2	78.2	87.7	54.0	21.5	10.1	3.8	2.6
cypress	4.9	0.8			.				4.2
Total softwoods	2,598.8	810.0	726.7	526.5	287.2	157.3	67.9	16.4	6.8
Select white oaks	105.4	.	36.4	15.8	14.9	11.9	22.0	4.4	
Select red oaks	158.5		42.8	25.9	13.3	32.3	7.7	13.7	22.8
Other white oaks	295.9	.	100.4	94.7	58.6	17.9	8.3	16.0	
Other red oaks	401.1		113.2	94.6	80.2	47.0	28.4	34.1	
Sweet pecan	6.8		2.5	1.4	. .	. .		2.9	
Water hickory	7.3		2.3	3.3	1.8		. .	.	
Other hickories	125.6		39.6	38.4	25.5	14.5	4.1	3.5	
Persimmon	2.2		2.2	...	...	...	.	. .	
Hard maple	3.5		.	3.5	.	. .	.	. .	
Soft maple	18.1		7.0		1.8	2.0		7.2	
Boxelder	7.2				4.2	3.0	.	.	
Sweetgum	54.0		27.4	9.6	9.7	3.9		3.4	
Blackgum	19.7		5.7	7.9	6.1			.	
White ash	17.5		12.7	1.8	1.3	1.7		.	
Other ashes	31.6		23.6	1.4	1.6		3.2	1.8	
Sycamore	25.0	.	12.3	2.8			3.2	6.7	
Cottonwood	31.6	.	10.8	16.7	2.8	.	...	1.3	
Basswood	1.3		1.3						
Willow	8.5		3.7	.	.	3.4		1.5	
Black walnut	2.7	. .	1.4		. .	.	1.2	...	
Black cherry	4.9		4.9	.	...	.	...	...	
American elm	16.2		7.9	6.1	.	2.2	...	...	
Other elms	60.9		33.8	12.9	1.2	5.4	5.1	2.5	
River birch	1.4				. .			1.4	
Hackberry	30.7		14.4	5.2	7.0	4.1			
Other locusts	2.9		1.4	1.4			.		.
Total hardwoods	1,440.6		507.8	343.2	230.3	149.2	83.3	100.4	26.5
All species	4,039.4	810.0	1,234.5	869.7	517.5	306.5	151.2	116.8	33.3

Table 40.—*Volume of sawtimberfor tree grade 4 on timberland by detailed species and diameter class, east Oklahoma counties. 1993*

Species	All classes	Diameter class *(Inches at breast height)* 9.0-10.9	11.0-12.9	13.0–14.9	15.0–16.9	17.0-18.9	19.0-20.9	21.0–28.9	≥29.0
				Million board feet					
Select white oaks	42.4		27.7	12.3	2.4				..
Select red oaks	67.5	.	19.3	28.6	3.8	9.3	..	6.5	.
Other white oaks	195.8	.	93.8	54.9	33.4	11.6	2.2	...	
Other red oaks	362.2	.	97.0	88.5	72.1	42.6	32.4	29.6	.
Sweet pecan	5.2	..	3.6	1.5	.				
Other hickories	132.5	..	51.9	45.3	16.9	18.4			
Hard maple	4.7	..	1.9	.	2.8	...	.		
Soft maple	6.8				3.2	...	3.6	..	..
Boxelder	6.8	..	..		...	5.4	..	1.4	...
Sweetgum	11.7	.	2.9	3.1	...	5.7	.		
Blackgum	12.6	.	2.3	4.6	1.9	2.2	1.6		
White ash	2.4	..	2.4						
Other ashes	2.2		2.2		.				
Sycamore	5.1		1.2	*3.9*					.
Cottonwood	8.2			*4.4*		2.4		1.4	
Willow	9.7		3.5	*1.3*		2.3		2.6	...
American elm	10.2		1.2	*5.5*	.	1.5	.	2.0	.
Other elms	12.4		6.3	*4.1*	1.5	...	0.5	.	.
Other locusts	4.7		3.5	.	...	1.2			
Other commercial	1.1	.	1.1	.	.	..	...	.	..
Total hardwoods	904.2		321.7	258.2	137.9	102.7	40.3	43.4	
All species	904.2		321.7	258.2	137.9	102.7	40.3	43.4	...

Table 41 .-*Volume of sawtimber on timberland by species and ownership class, east Oklahoma counties. 1993*

Species	All ownerships	National forest	Other public	Forest industry	Forest industry leased	Other private
			Million board feet			
Yellow pines	4,097.5	924.5	258.8	1,247.7	...	1,666.5
Cypress	11.5		2.2	6.1	..	3.2
Redcedar	52.2	5.4	1.0	2.2	.	43.6
Total softwoods	4,161.2	929.9	262.0	1,256.0		1,713.3
Select white-red oaks	648.4	52.9	110.8	94.0		390.7
Other white-red oaks	1,694.0	102.1	98.6	90.5		1,402.8
Hickory	420.8	18.8	30.2	41.2		330.7
Hard maple	8.2		.	..	.	8.2
Sweetgum	100.4	12.1	5.8	11.9	.	70.6
Tupelo and blackgum	60.4	4.0	..	4.7	..	51.7
Ash-walnut-black cherry	215.6	1.8	33.4	10.5		169.9
Other hardwoods	702.5	2.3	191.6	25.9	.	482.8
Total hardwoods	3,850.3	193.8	470.3	278.7		2,907.4
All species	8,011.6	1.123.7	732.3	1,534.8	.	4,620.8

Table 42.—Average net annual growth, average annual removals, and average annual mortality of live trees by county and species group, east Oklahoma counties, 1993

County	Net Growth			Removals			Mortality		
	All species	Softwood	Hardwood	All species	Softwood	Hardwood	All species	Softwood	Hardwood
	Million cubic feet								
Adair	3.6	0.7	2.9	5.4	1.9	3.5	2.6	0.2	2.4
Atoka	10.1	3.7	6.3	5.2	2.8	2.4	1.3	0.1	1.2
Bryan	6.0	0.3	5.7	1.4		1.4	0.8		0.8
Cherokee	6.4	0.9	5.6	5.1	0.1	5.0	2.3		2.3
Choctaw	5.5	1.9	3.6	2.2	0.6	1.6	1.2	0.1	1.1
Coal	2.1		2.0	0.3		0.3	0.7		0.7
Delaware	5.4	0.3	5.0	0.5	0.1	0.4	1.0	0.1	0.9
Haskell	3.6	1.4	2.2	0.7		0.7	2.8		2.7
Latimer	8.6	6.1	2.5	3.8	2.9	0.9	1.0	0.4	0.6
Le Flore	31.5	20.7	10.9	10.9	7.3	3.5	2.6	0.4	2.2
McCurtain	54.2	44.5	9.7	30.3	21.8	8.5	3.8	1.2	2.5
McIntosh	2.2	0.2	2.0	0.1	...	0.1	1.7		1.7
Mayes	6.3	0.4	5.9	0.4		0.4	0.6	0.1	0.6
Muskogee	4.5		4.4	1.0		1.0	1.0		1.0
Ottawa	1.0		1.0	0.6		0.6	0.3		0.3
Pittsburg	1.9	1.0	0.9	1.2	0.5	0.7	1.5	0.1	1.4
Pushmataha	38.7	29.8	8.9	20.4	17.9	2.5	2.1	1.2	1.0
Sequoyah	4.2	0.2	4.0	0.3		0.3	1.0		1.0
All counties	195.7	112.0	83.7	89.7	55.9	33.7	28.2	3.8	24.5

Table 43.—*Average net annual growth, average annual removals, and average annual mortality of live trees by ownership class and species group, east Oklahoma counties, 1993*

Ownership class	Net Growth			Removals			Mortality		
	All species	Softwood	Hardwood	All species	Softwood	Hardwood	All species	Softwood	Hardwood
	Million cubic feet								
National forest	10.1	10.3	-0.2	8.6	6.5	2.1	0.9	0.5	0.4
Other public	10.5	3.0	7.5	2.0	0.1	1.9	4.0	0.6	3.4
Forest industry	71.9	63.8	8.1	30.7	27.8	2.9	2.7	1.3	1.4
Other private	103.2	34.9	68.3	48.4	21.6	26.8	20.6	1.4	19.2
All ownerships	195.7	112.0	83.7	89.7	55.9	33.7	28.2	3.8	24.5

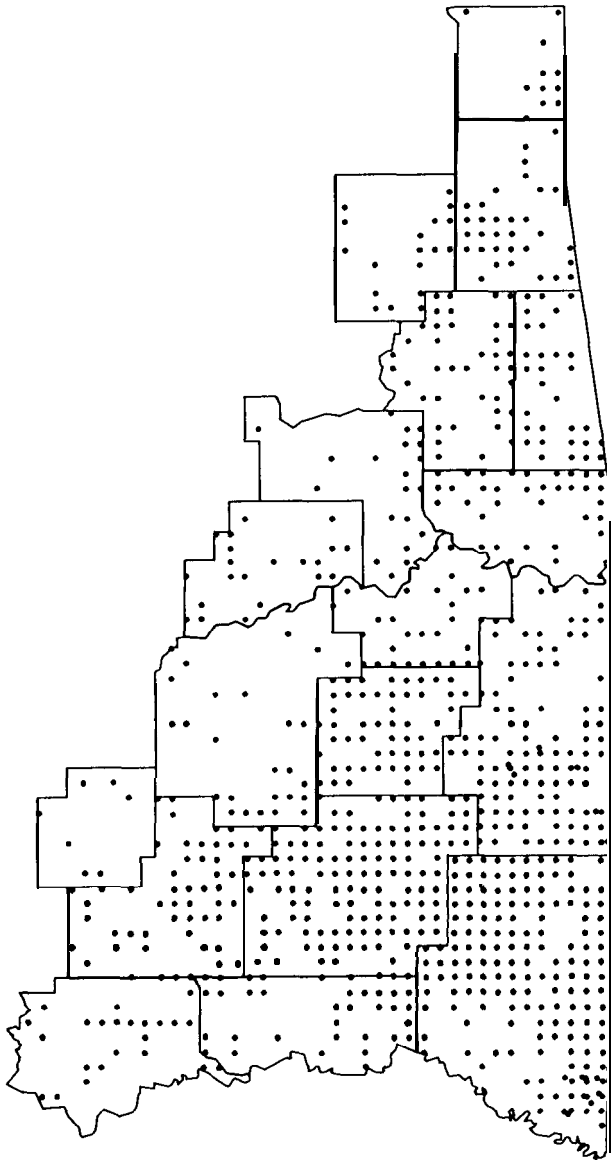

Figure 1 .-*Location of Forest Inventory and Analysis plots on timberland, east Oklahoma, 1993.*

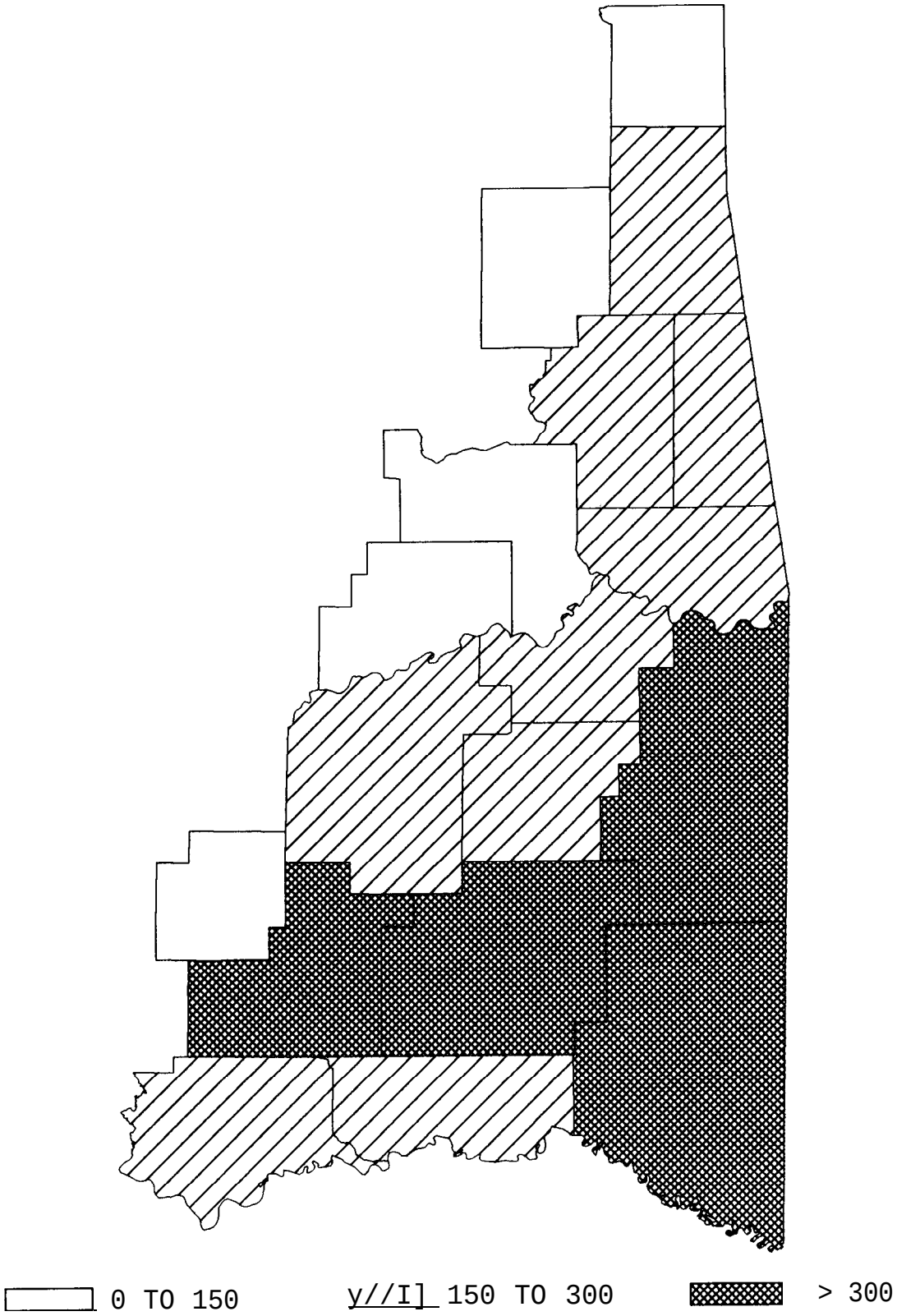

Figure 2.-Total timberland by county in thousand acres, east Oklahoma, 1993.

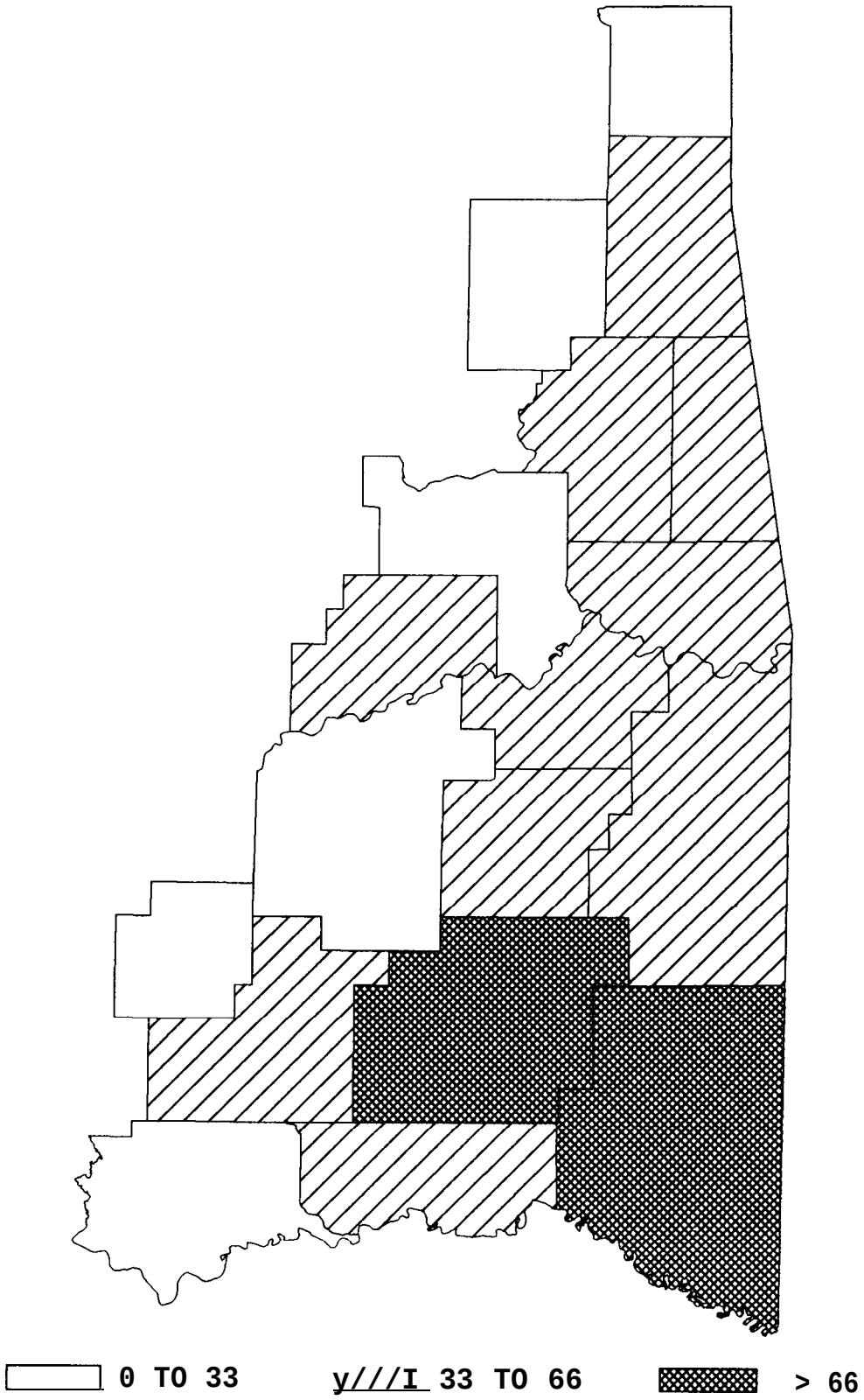

Figure *3.-Percent timberland of total land area by county, east Oklahoma, 1993.*

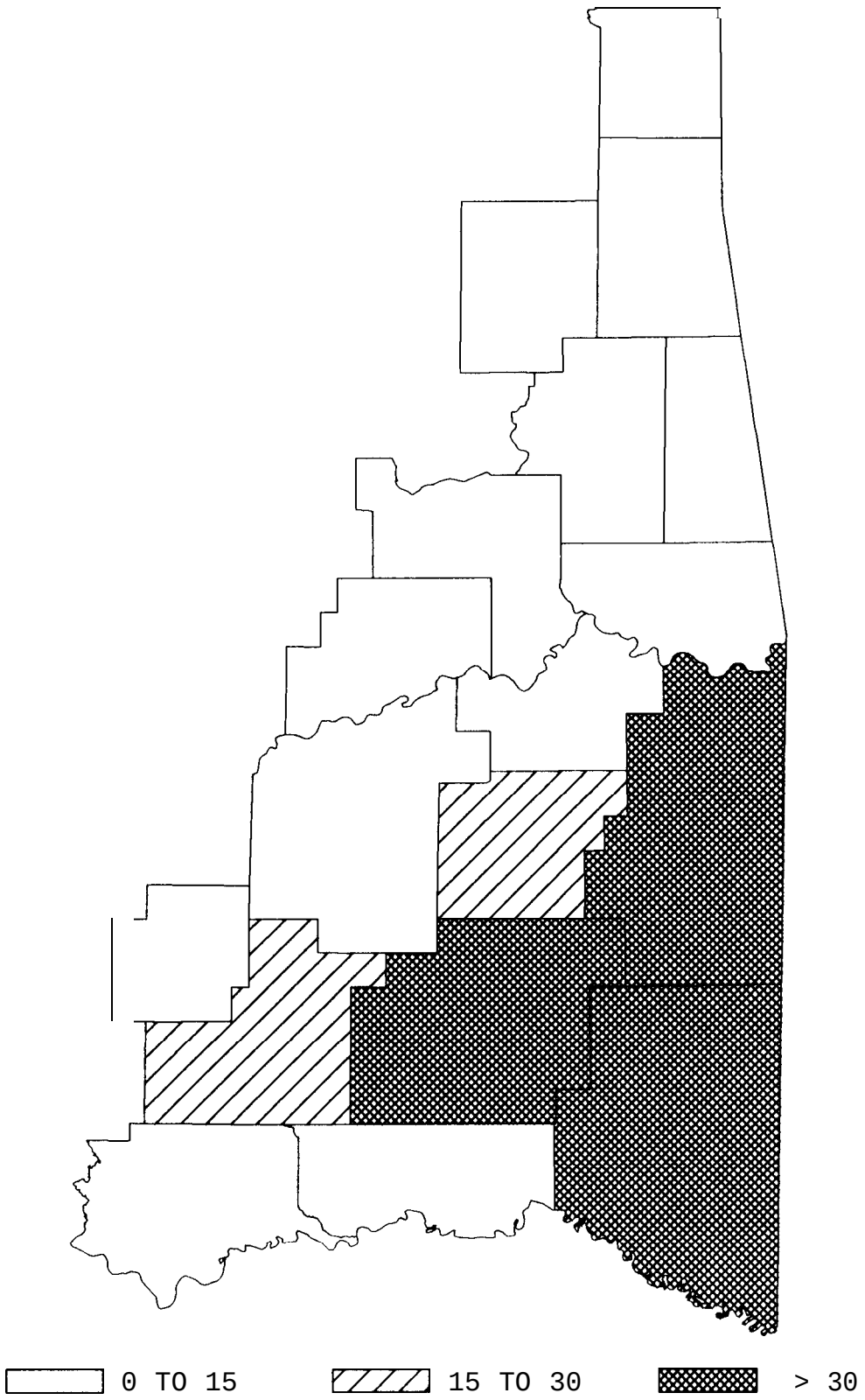

Figure 4.—*Percent timberland by county, loblolly-shortleaf pine forest type, east Oklahoma, 1993.*

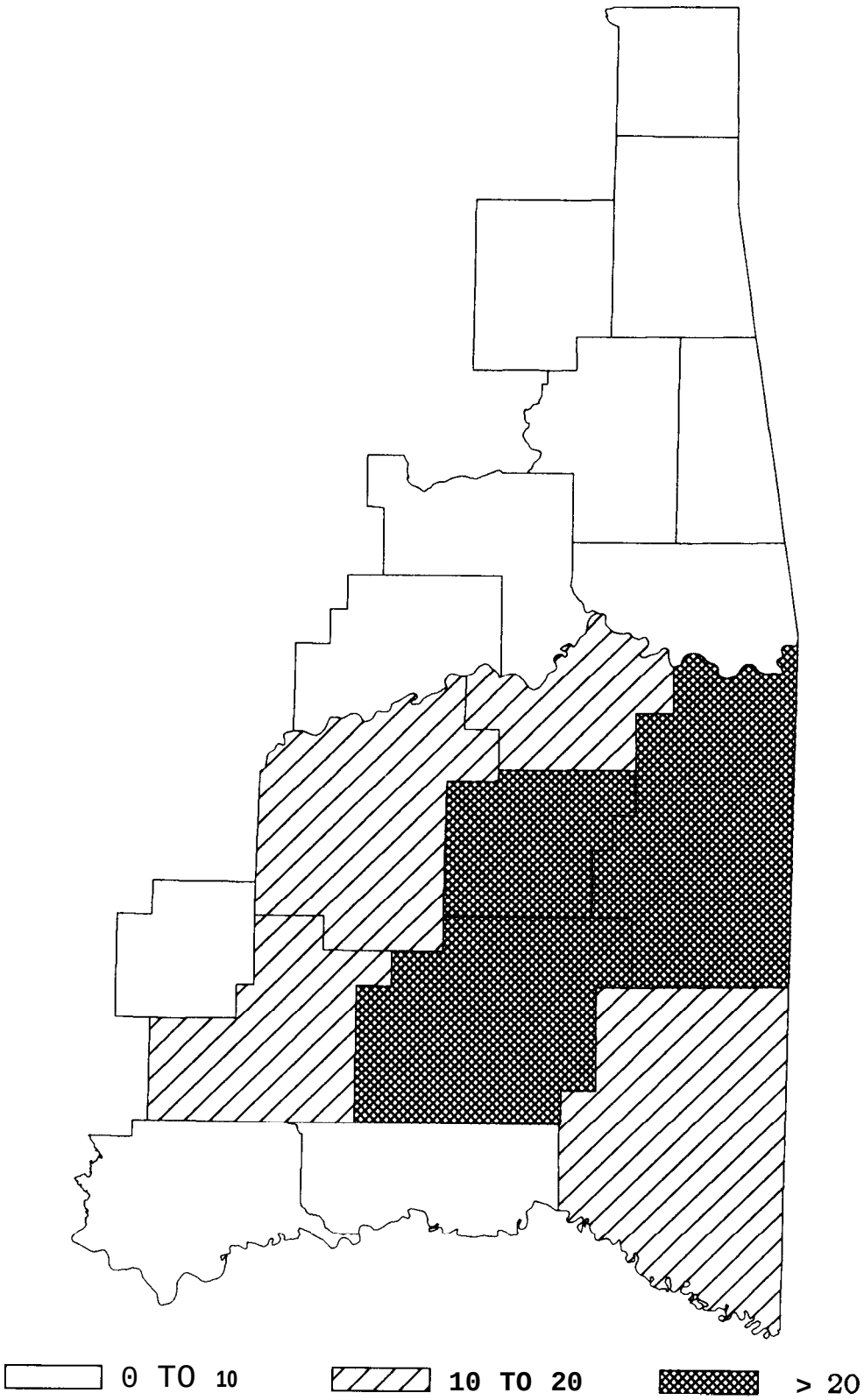

Figure 5.—*Percent timberland by county oak-pine forest type, eastOklahoma, 1993.*

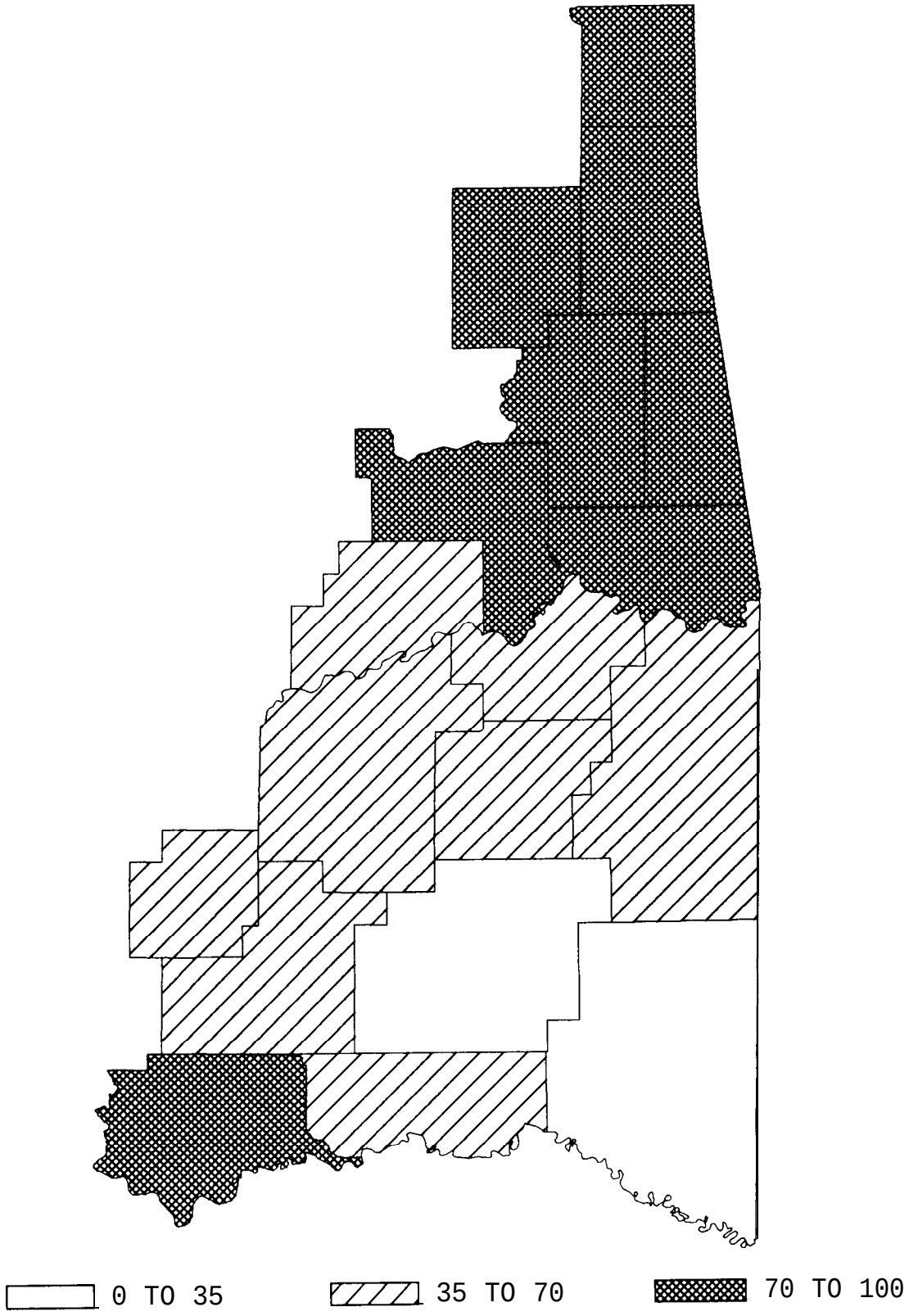

Figure *6.-Percent timberland by county, oak-hickory forest type, east Oklahoma, 1993.*

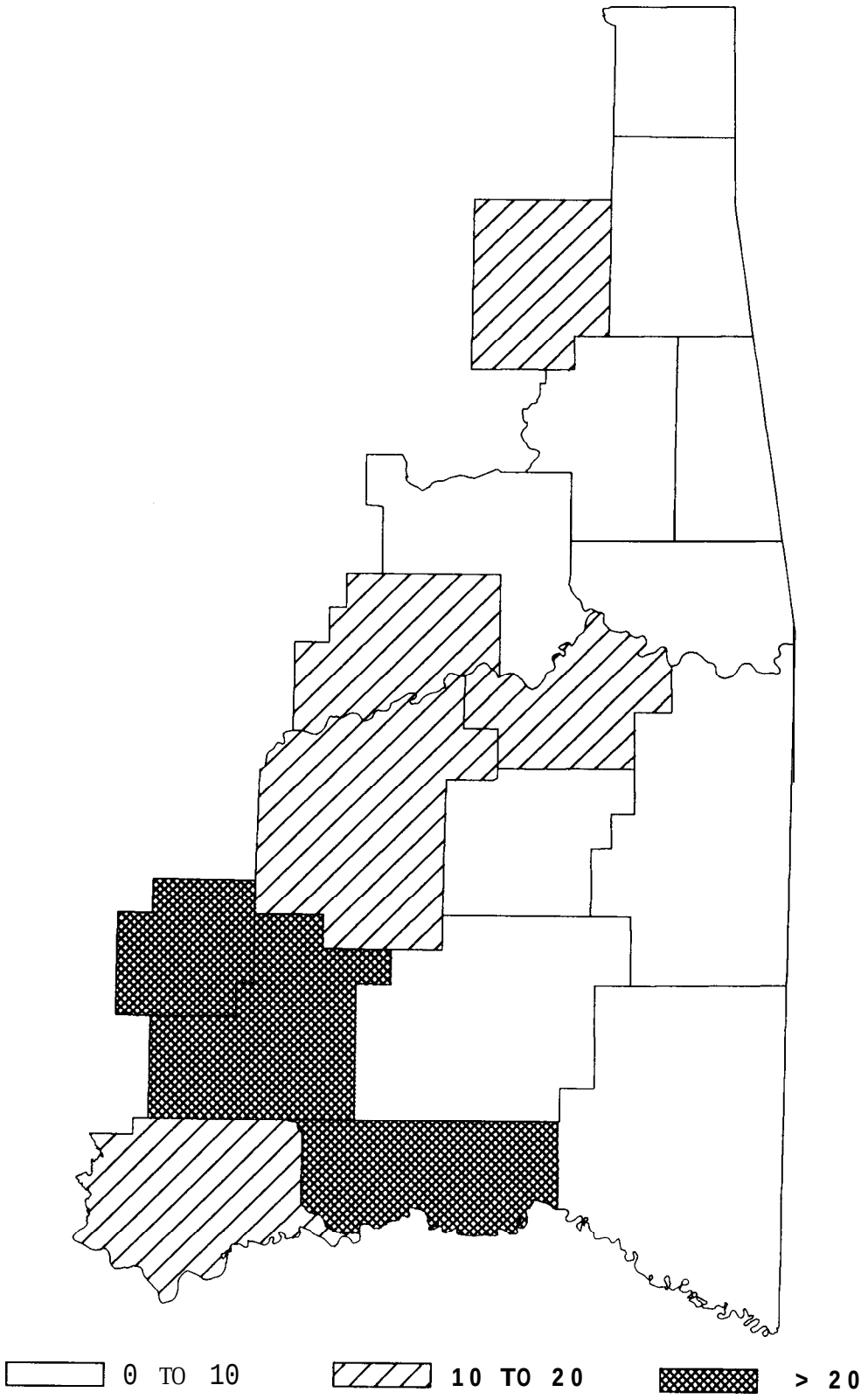

Figure *T.- Percent timberland by county, oak-gum-cypress forest type, east Oklahoma, 1993.*

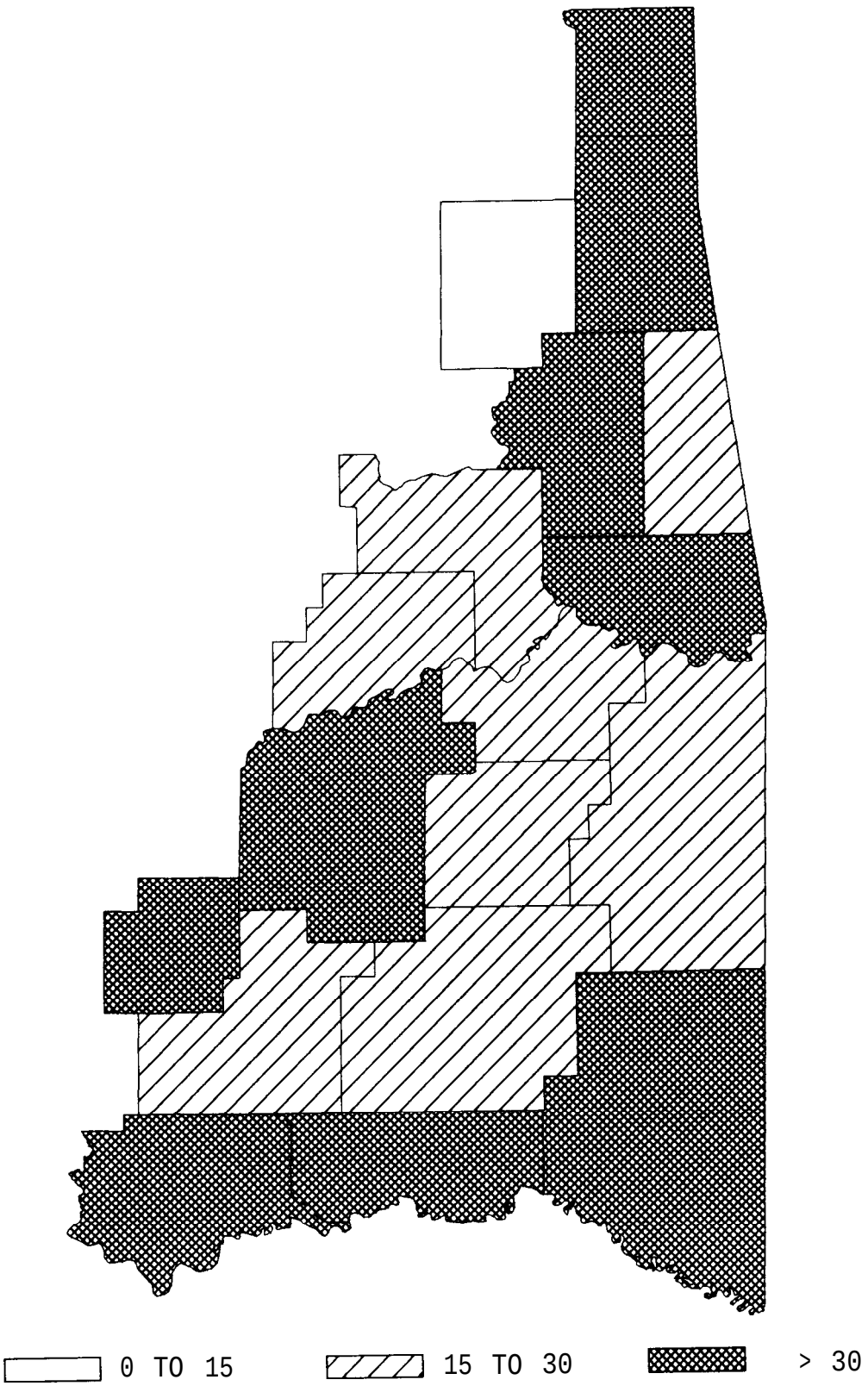

Figure 8.—*Percent timberland by county, seedling and sapling stand-size class, east Oklahoma, 1993.*

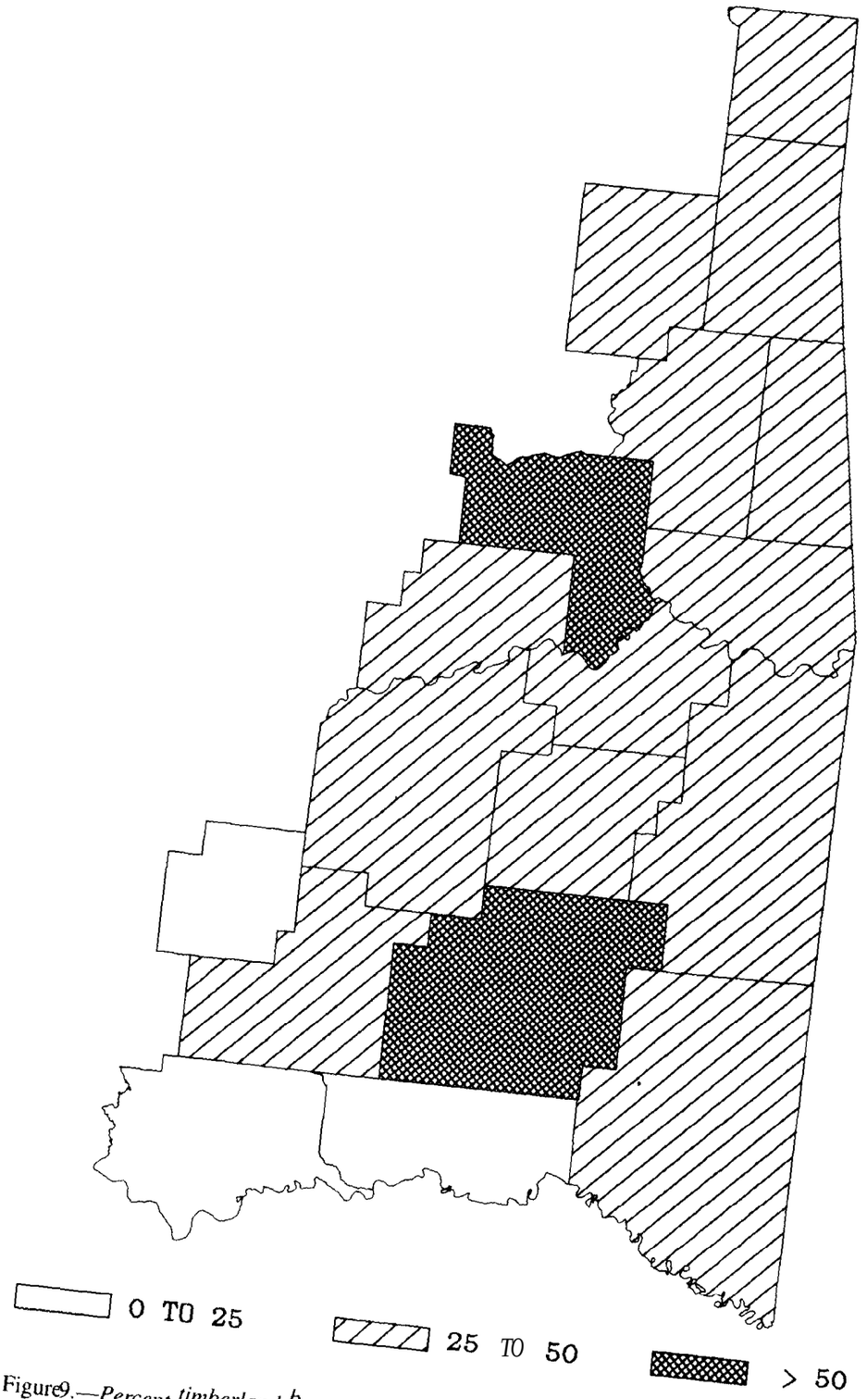

Figure 9.—*Percent timberland by county, poletimber stand-size class, east Oklahoma, 1993.*

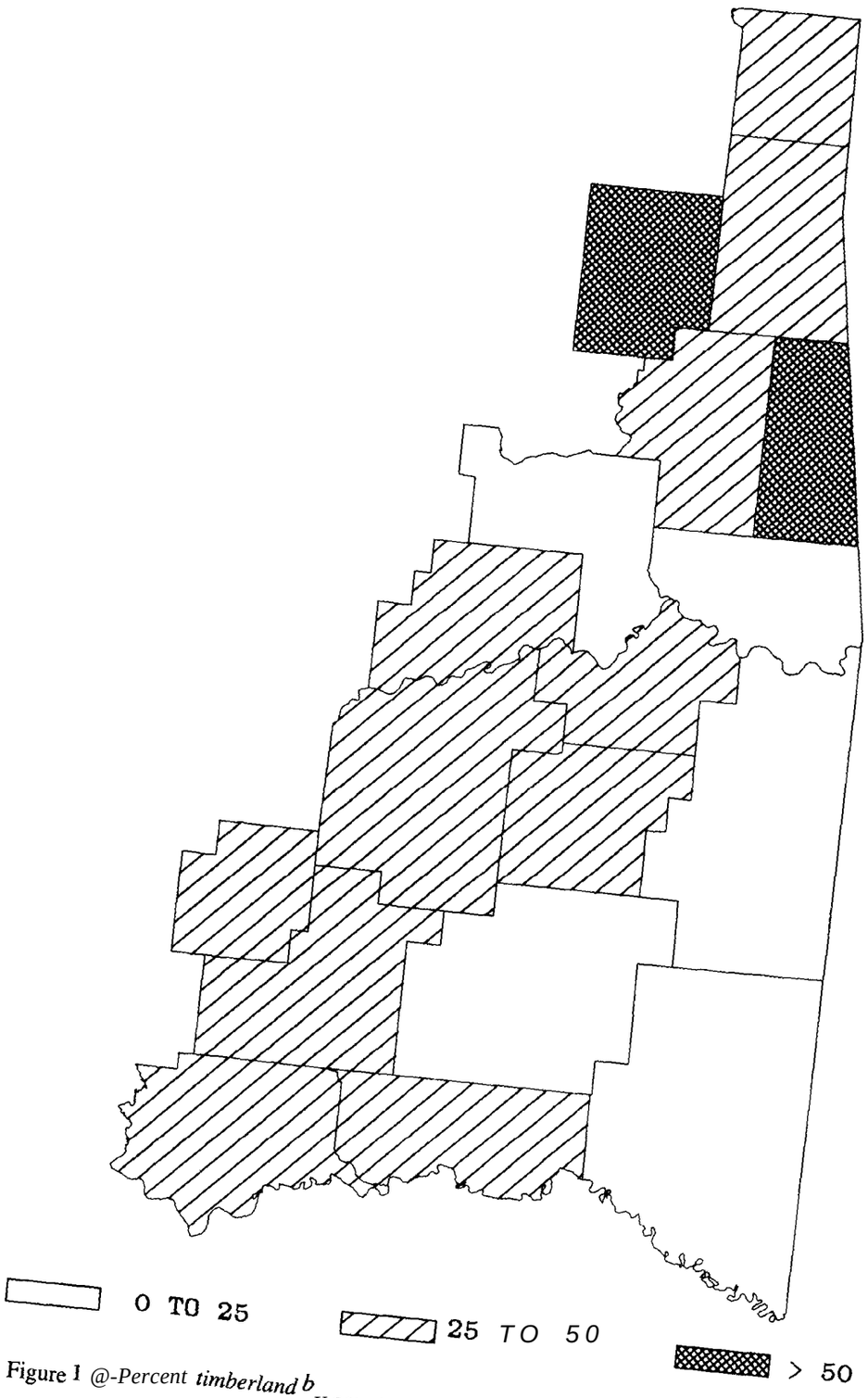

Figure 1 *@-Percent timberland by county, sawtimber stand-size class, east Oklahoma, 1993.*

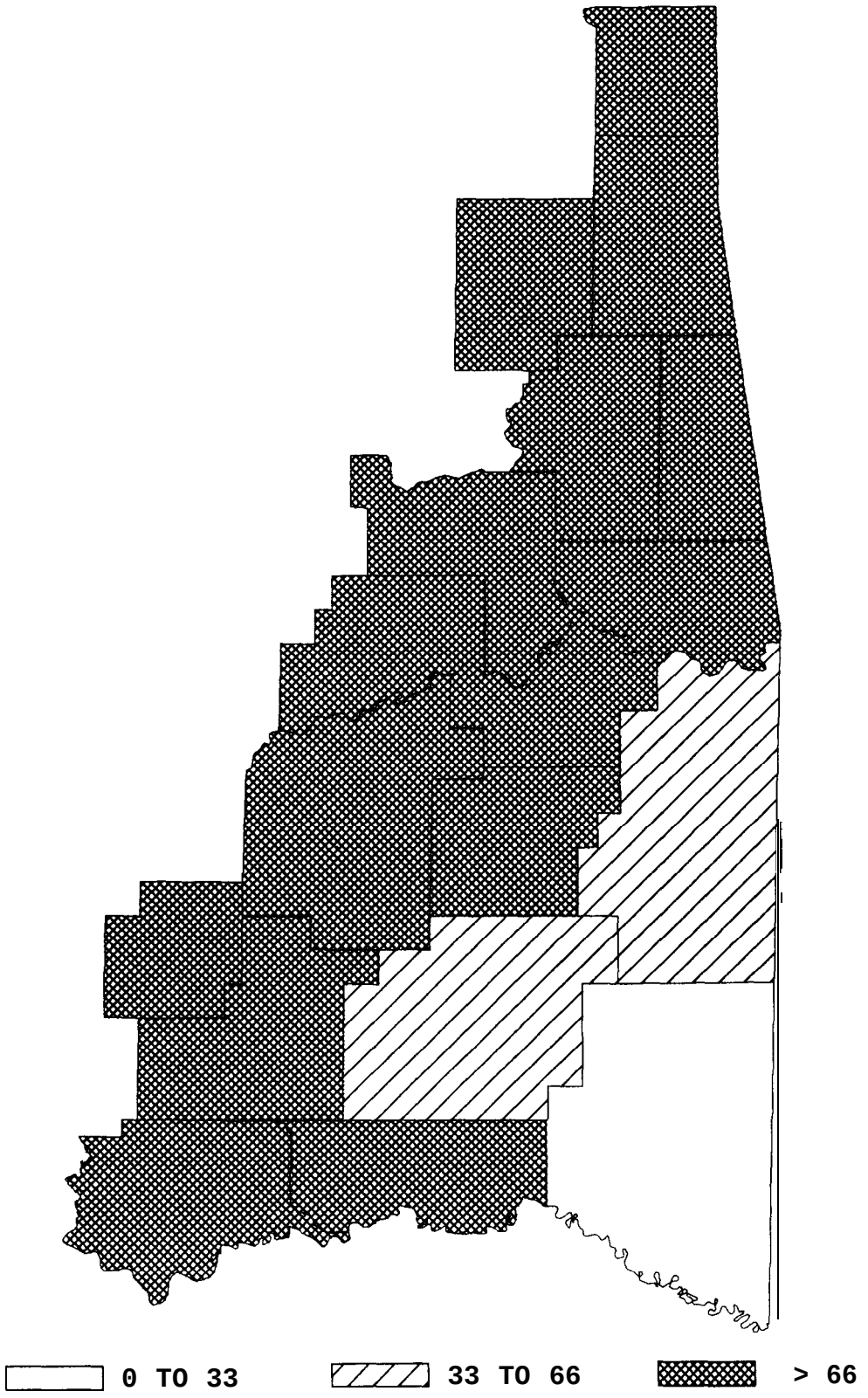

Figure 11 .-Percent timberland by county, nonindustrial private ownership class, east Oklahoma, 1993.

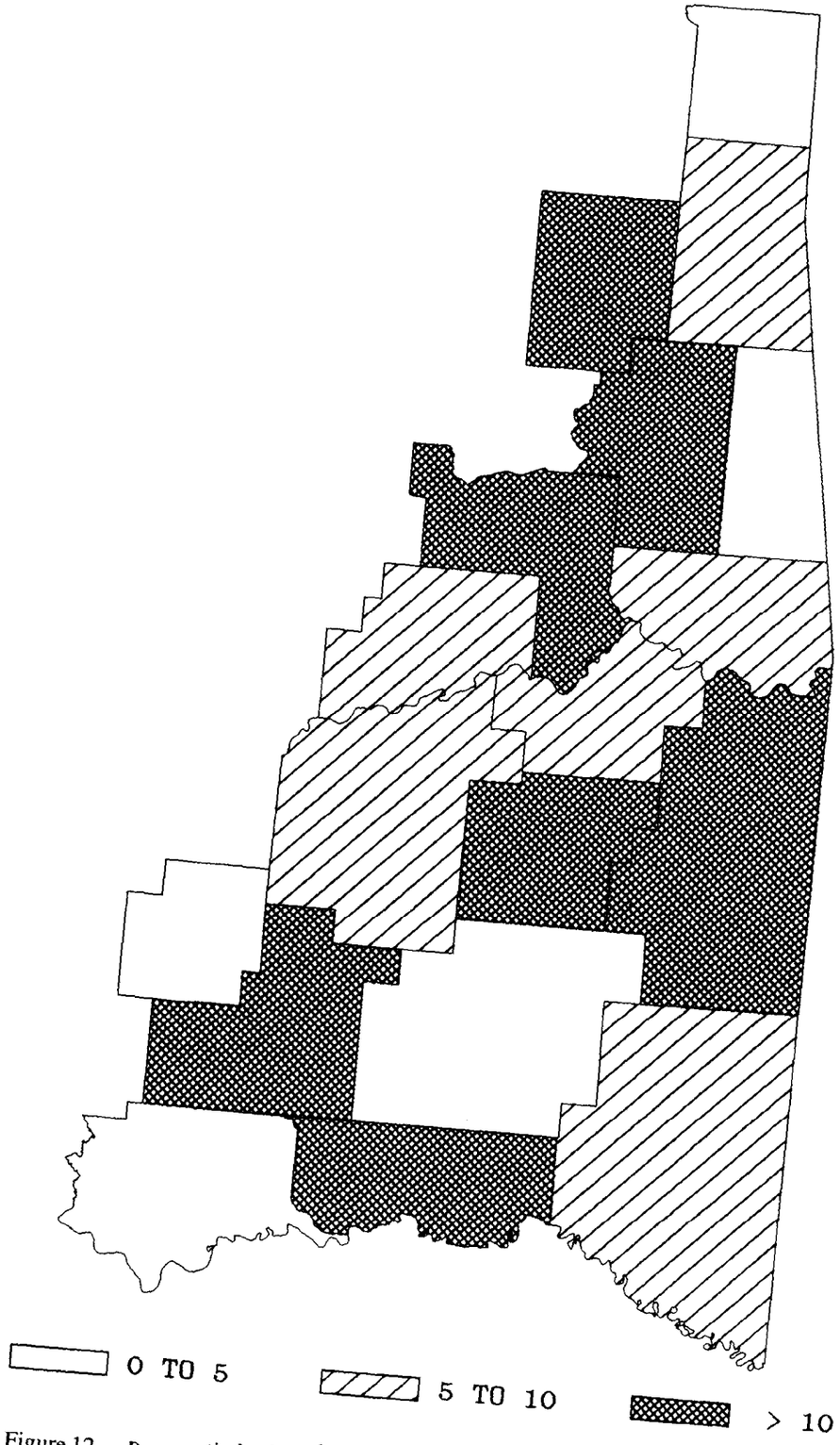

Figure 12.—*Percent timberland by county,* **public** *ownership class, east Oklahoma 1993.*

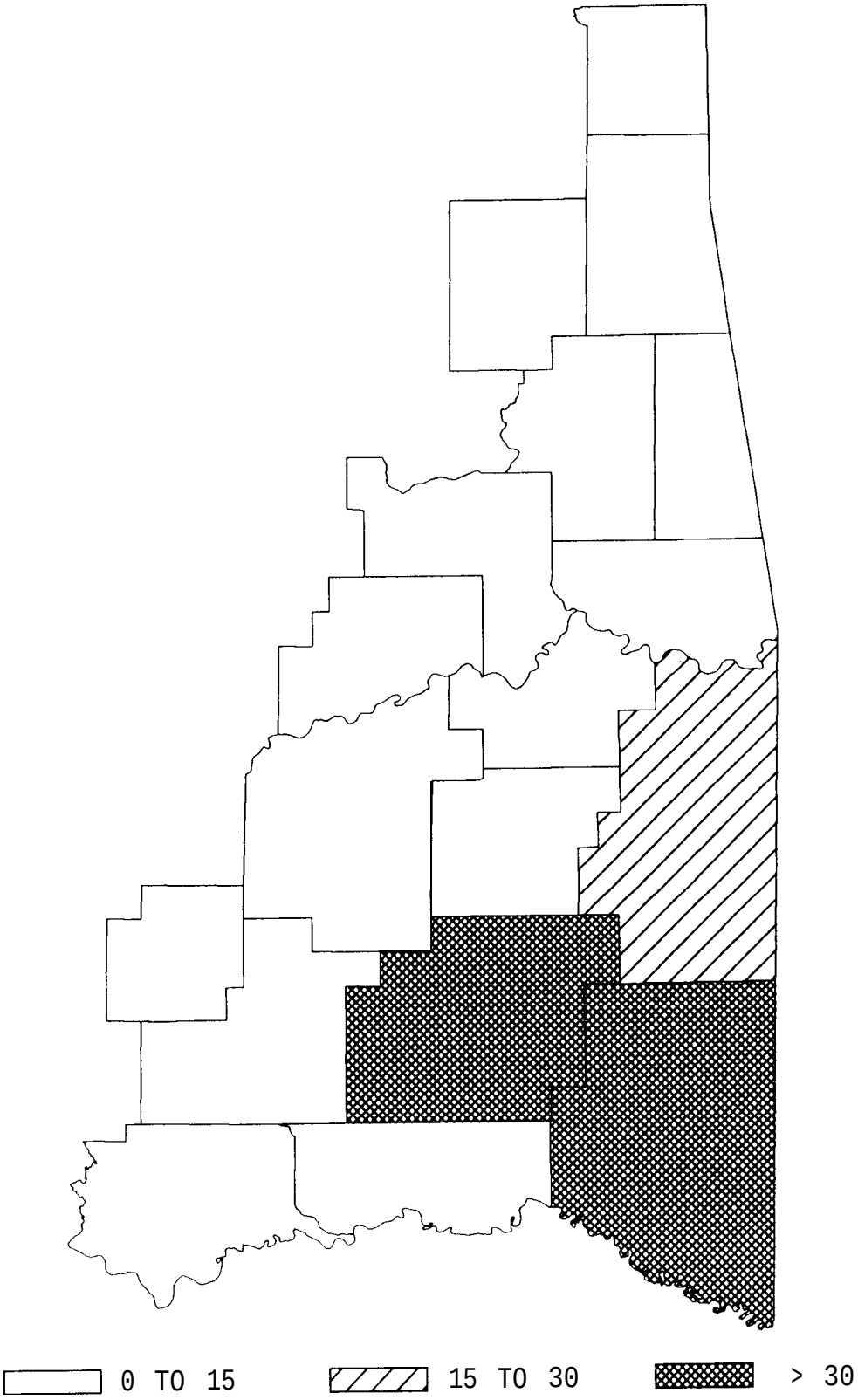

Figure 13.—*Percent timberland by county, forest industry ownership class, east Oklahoma, 1993.*

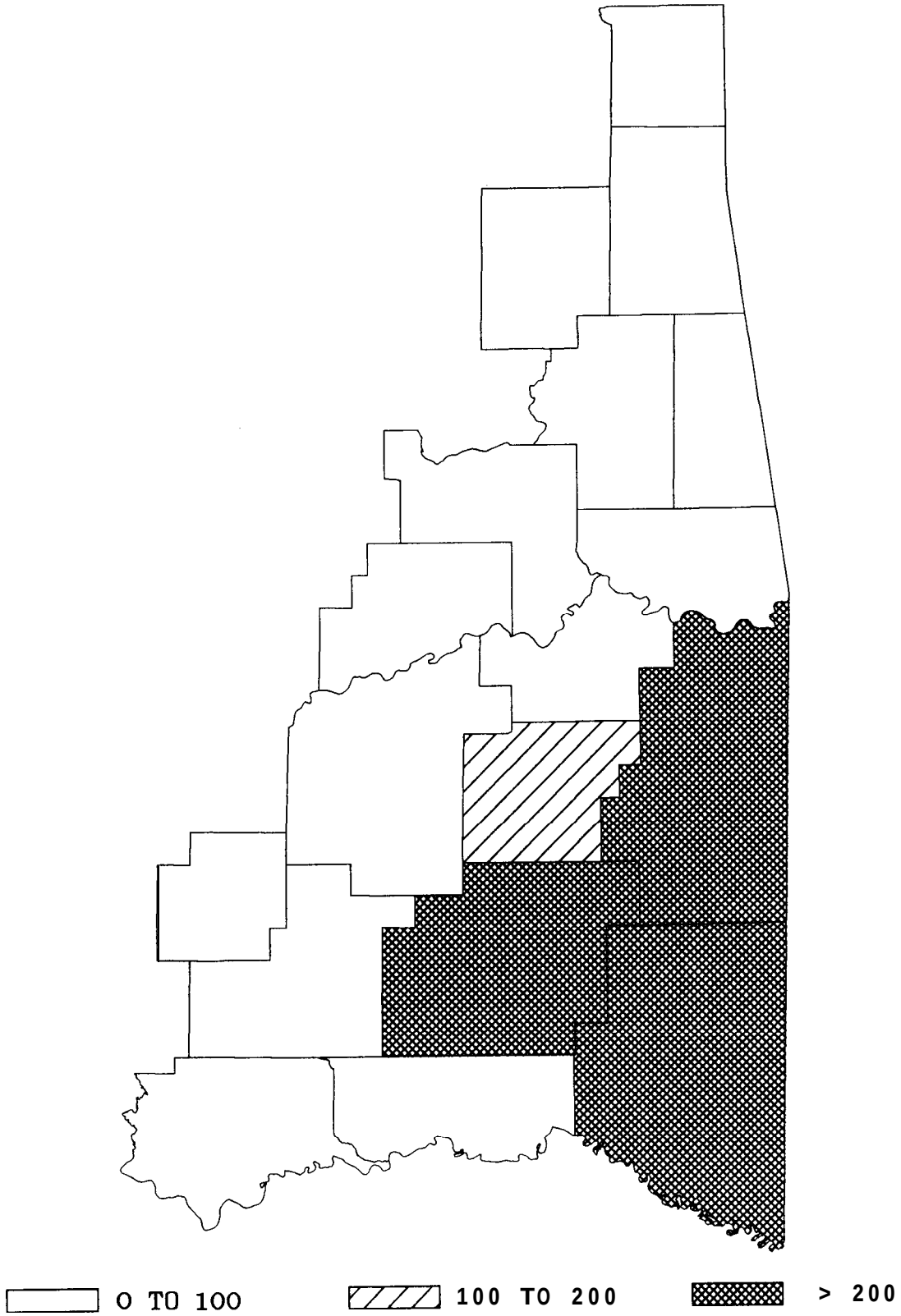

Figure 14.—*Softwood growing-stock volume by county, in million cubic feet, east Oklahoma, 1993.*

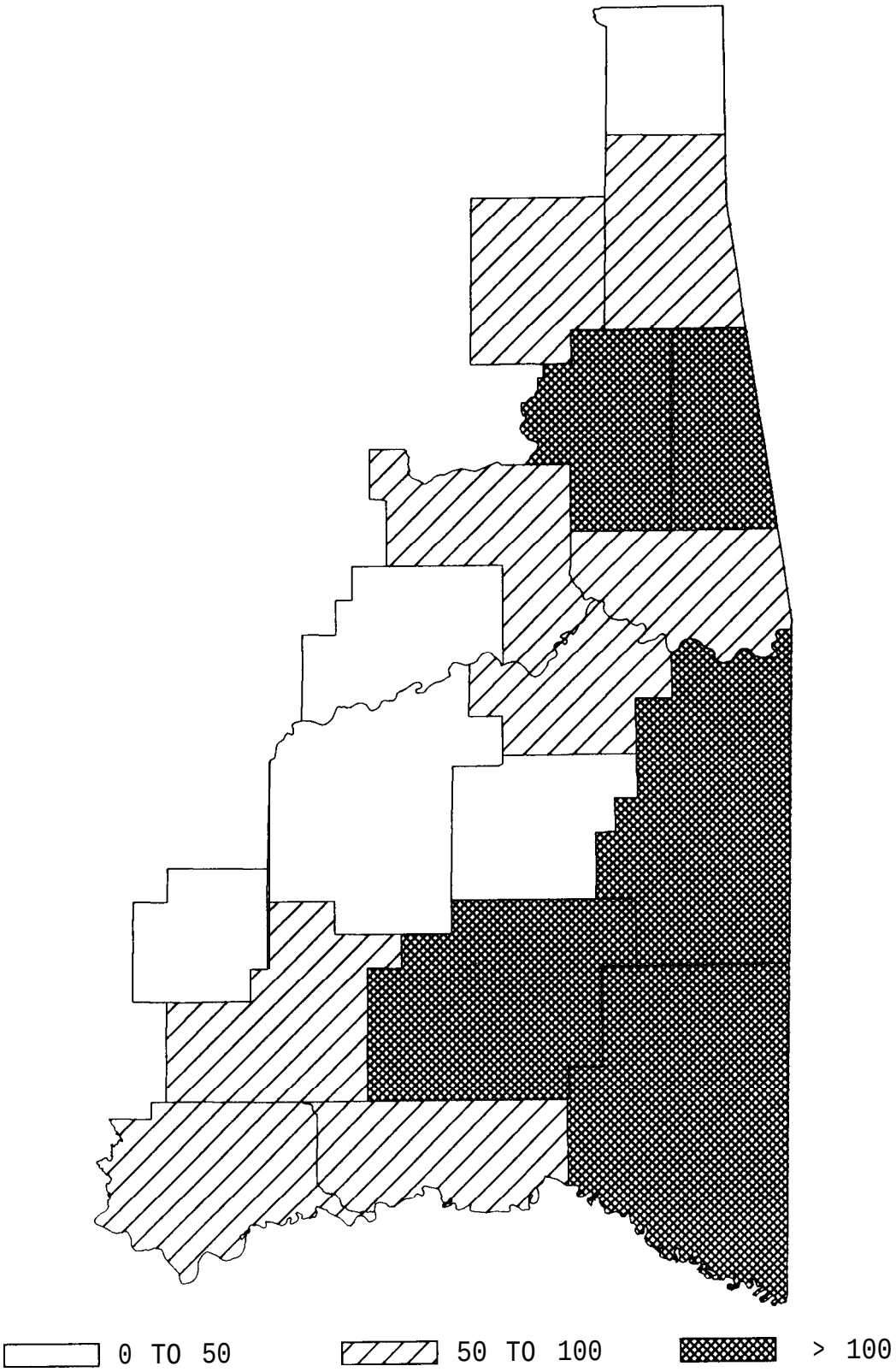

Figure 15.—*Hardwood growing-stock volume by county, in million cubic feet, east Oklahoma, 1993.*

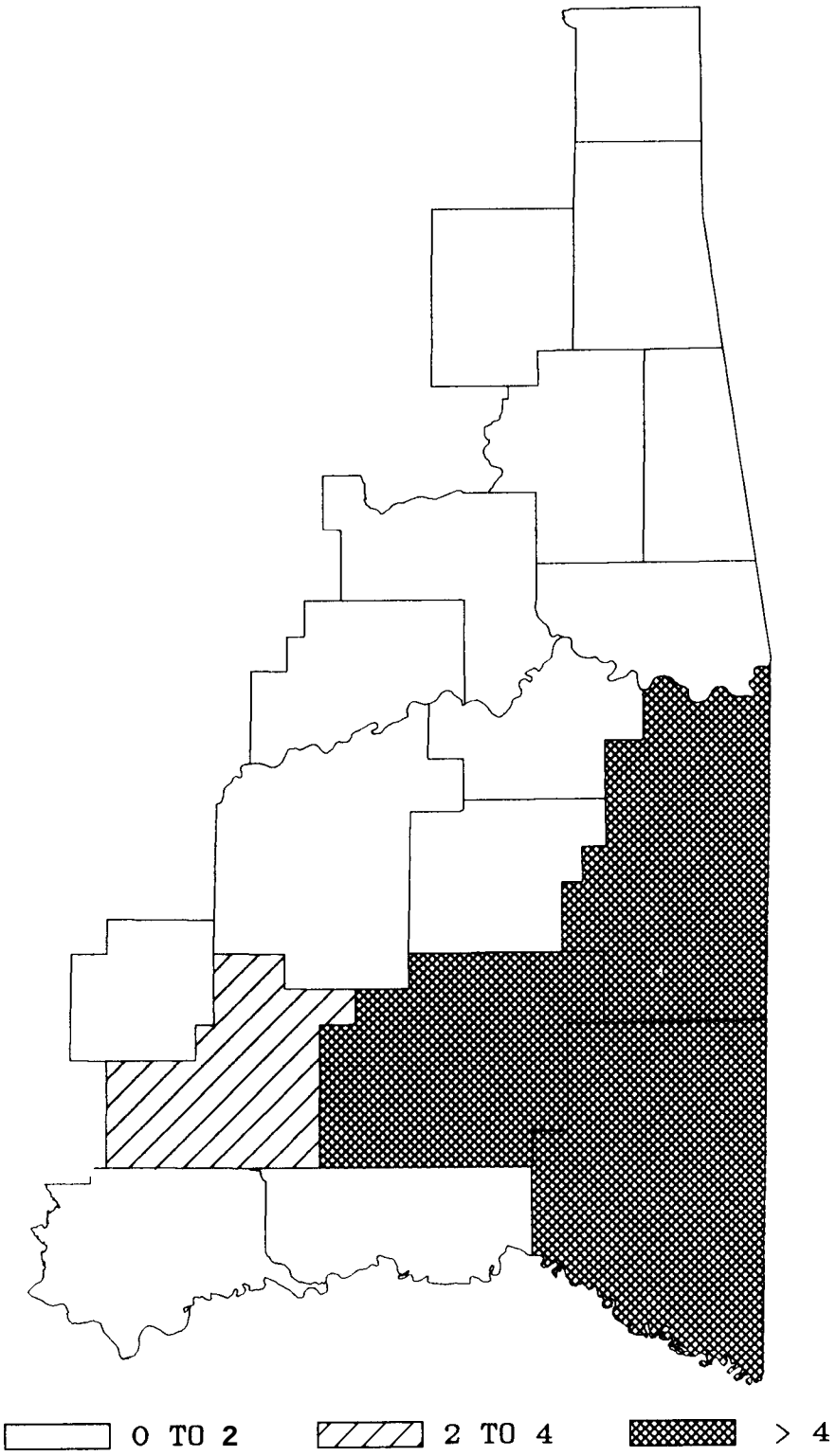

Figure 16.—*Volume of rough and rotten softwood trees by county, in million cubic feet, east Oklahoma, 1993.*

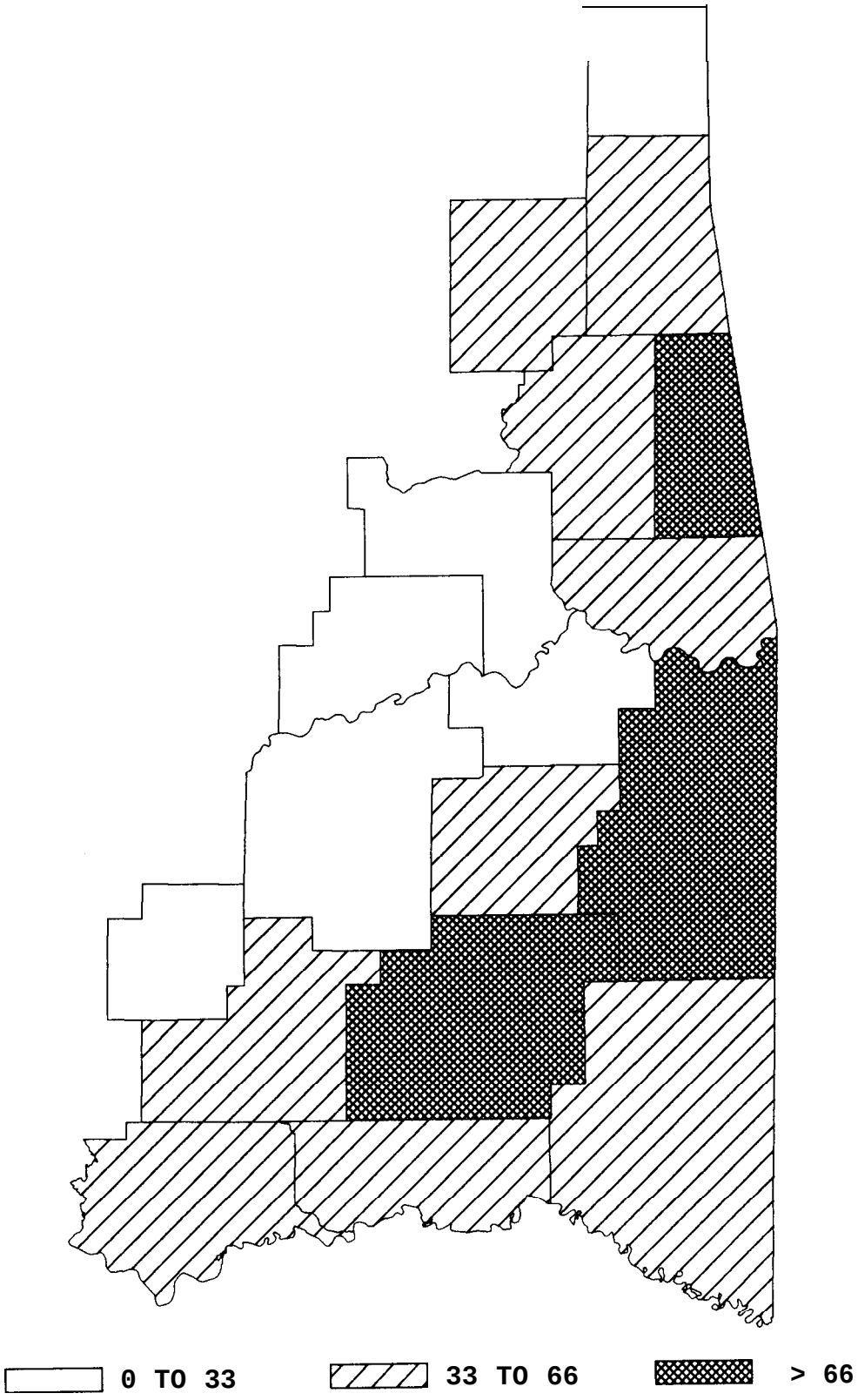

Figure 17.—Volume of rough and rotten hardwood trees by county, in million cubic feet, east Oklahoma, 1993.

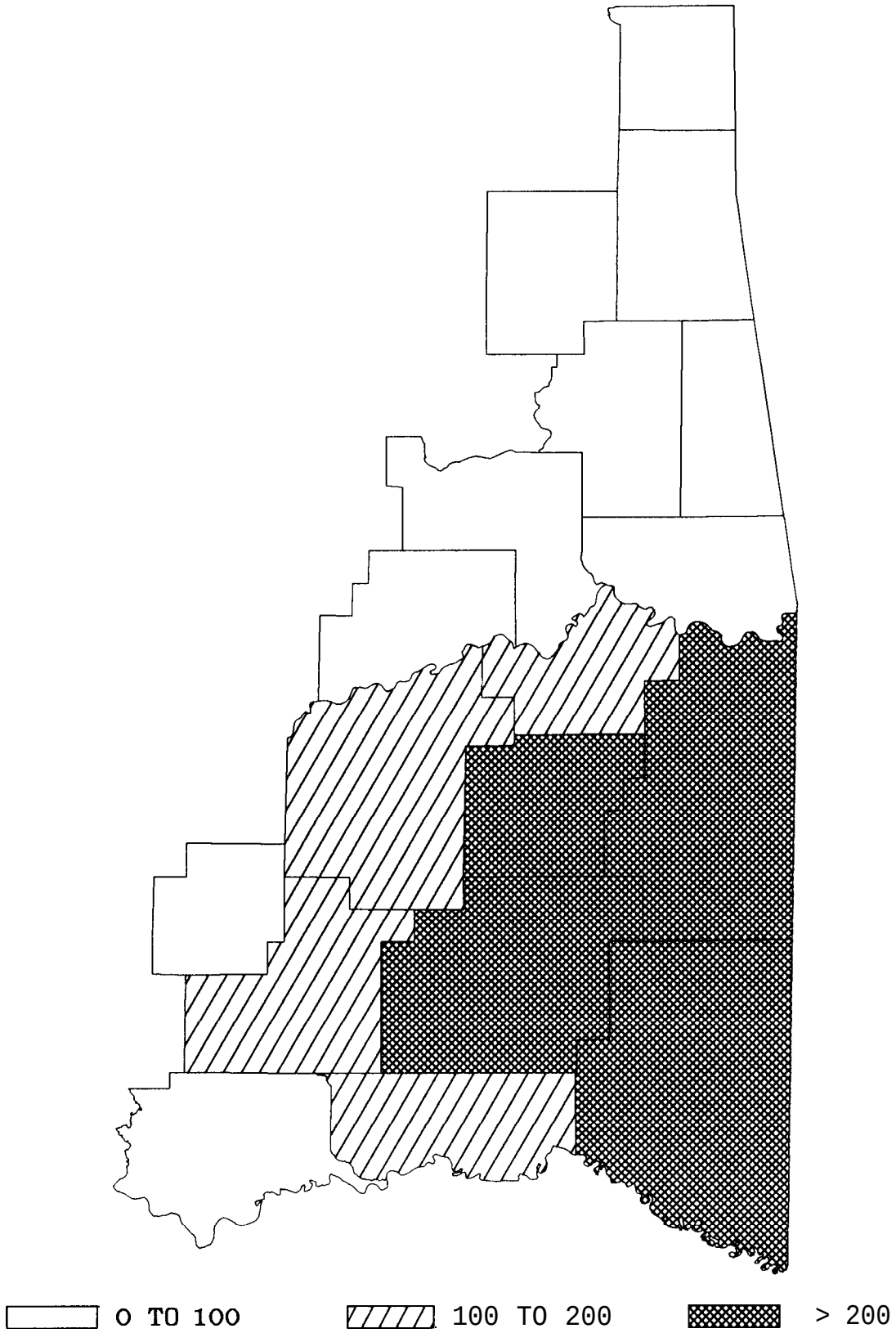

Figure 1 *K-Average softwood growing-stock volume on timberland by county, in cubic feet per acre, east Oklahoma, 1993.*

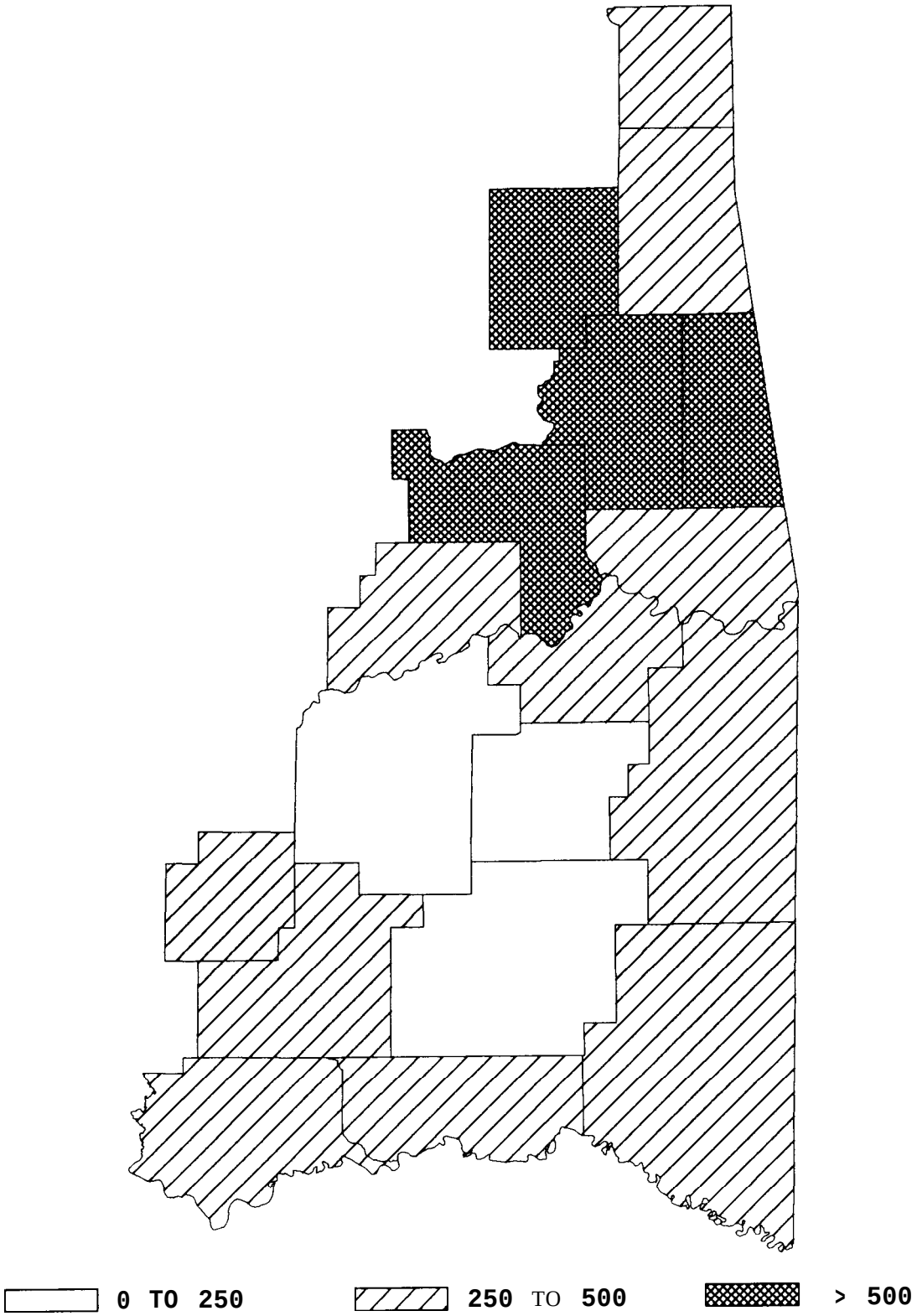

Figure 19.—*Average hardwood growing-stock volume on timberland by county, in cubic feet per acre, east Oklahoma, 1993.*

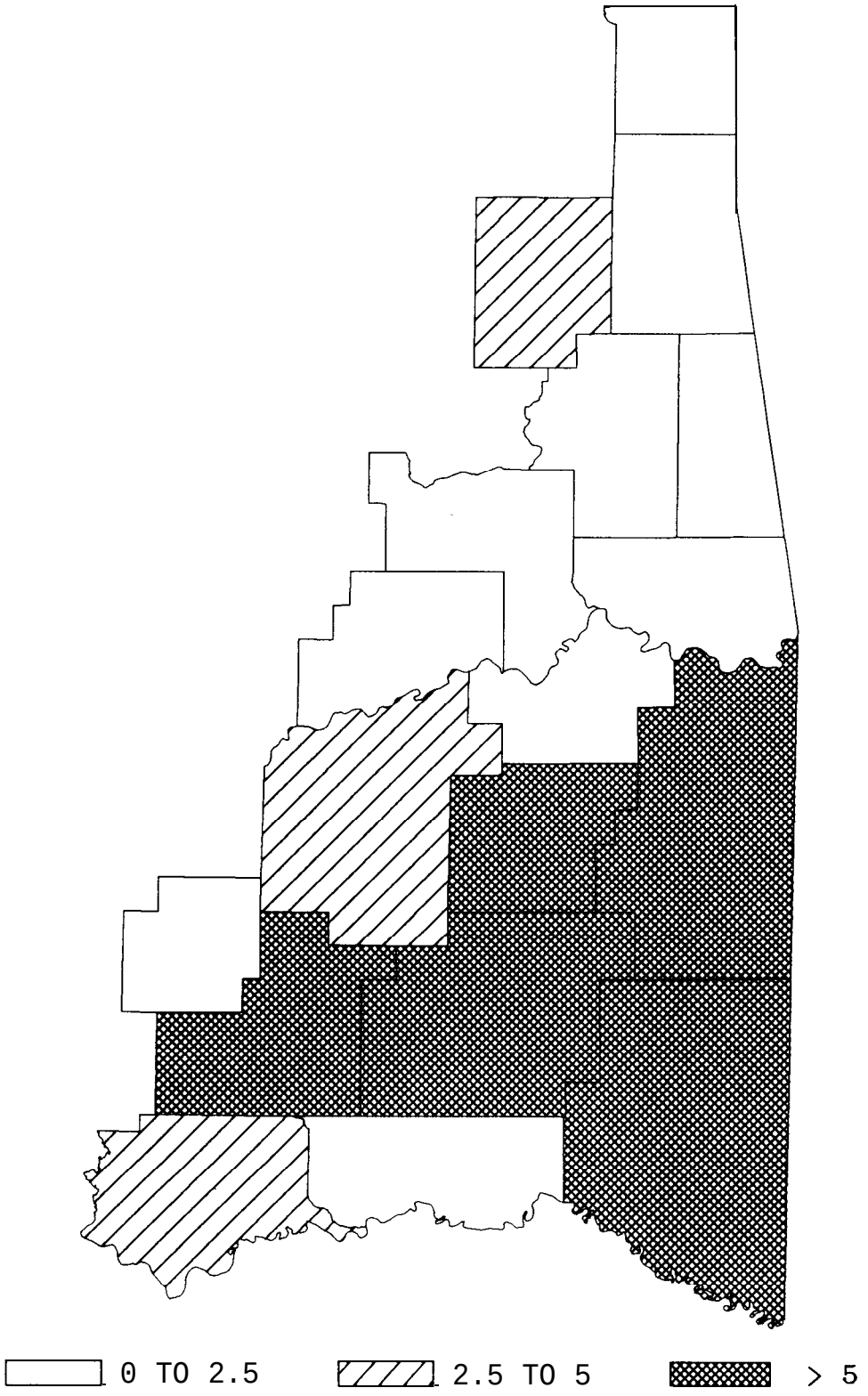

Figure 20.—*Average volume of rough and rotten softwood trees on timberland by county, in cubic feet per acre, east Oklahoma, 1993.*

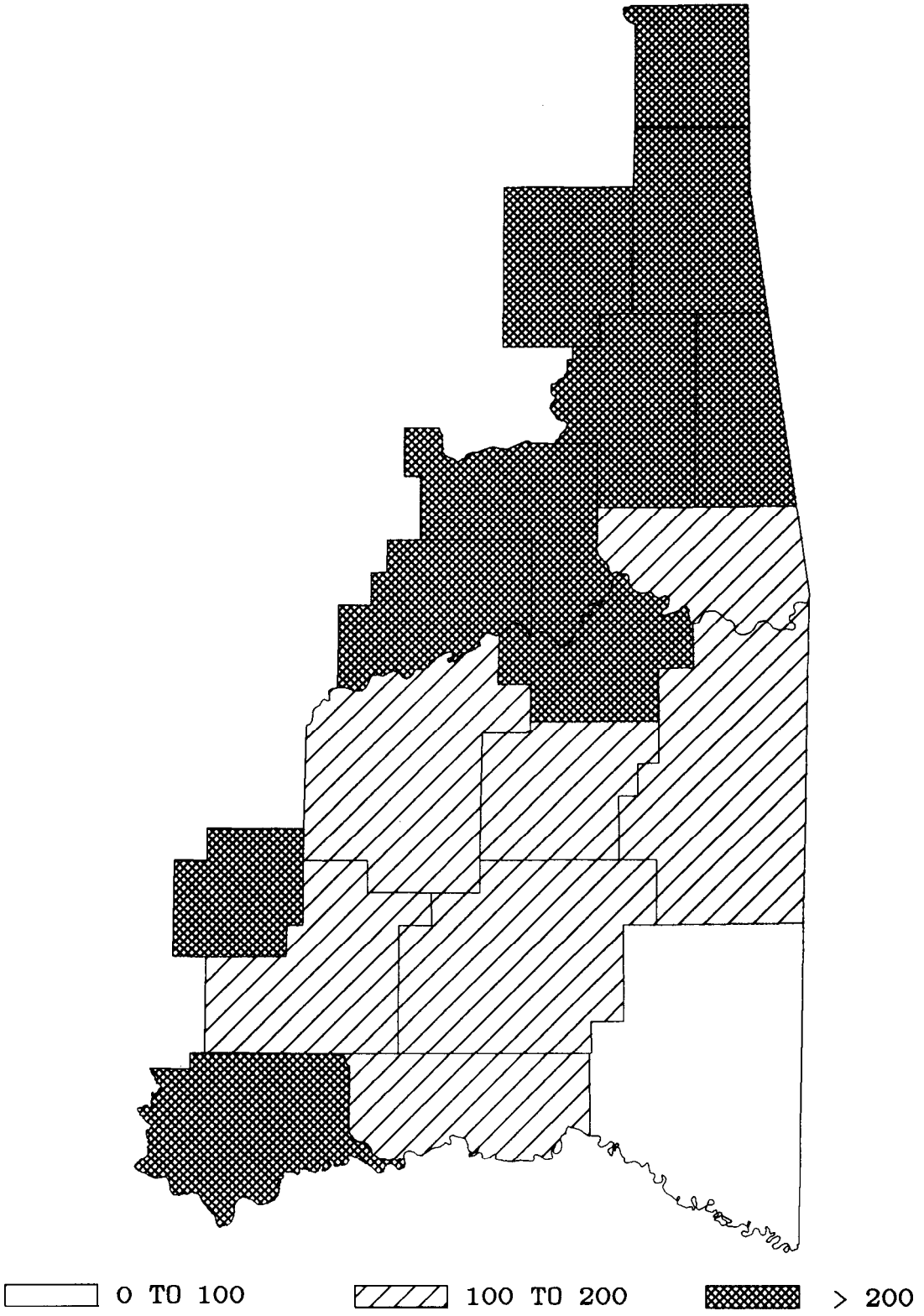

Figure 2 1 .-*Average volume of rough and rotten hardwood trees on timberland by county, in cubic* ***feet per*** *acre, east Oklahoma, 1993.*

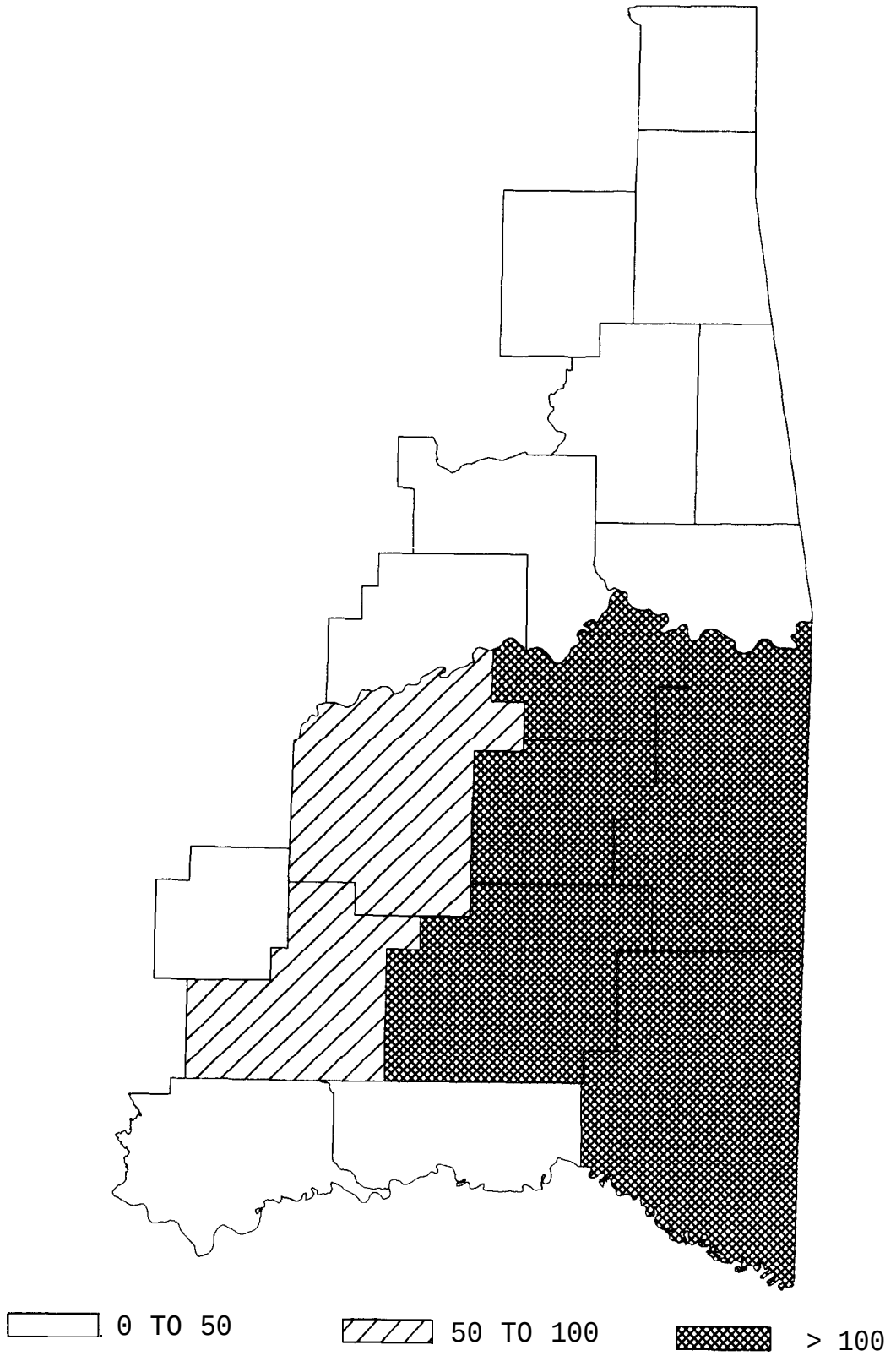

Figure 22.-Average number of live softwood trees per acre on timberland by county, east Oklahoma, 1993.

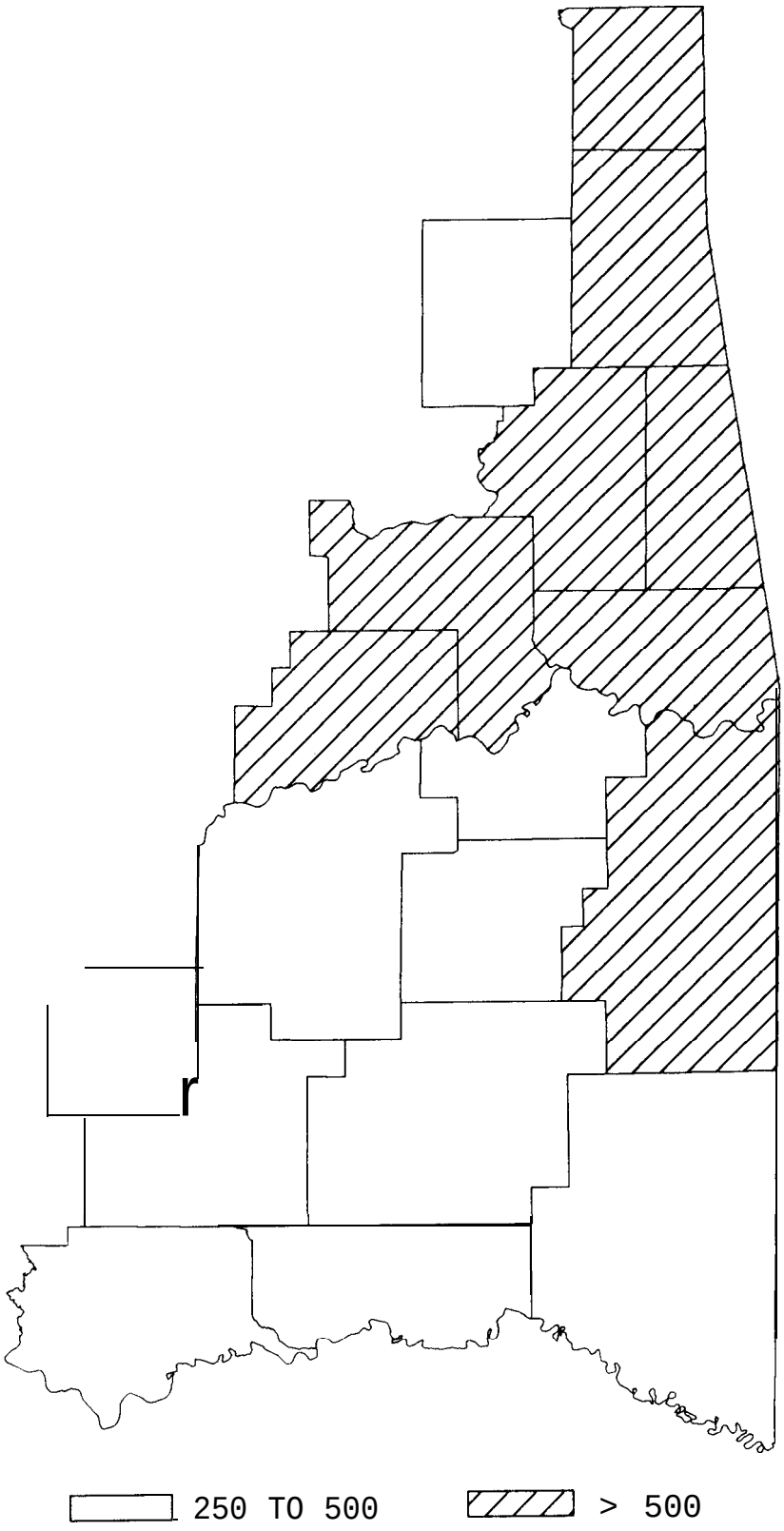

Figure 23.—*Average* ***number of live hardwood trees per acre on timberland by county, east Oklahoma, 1993.***

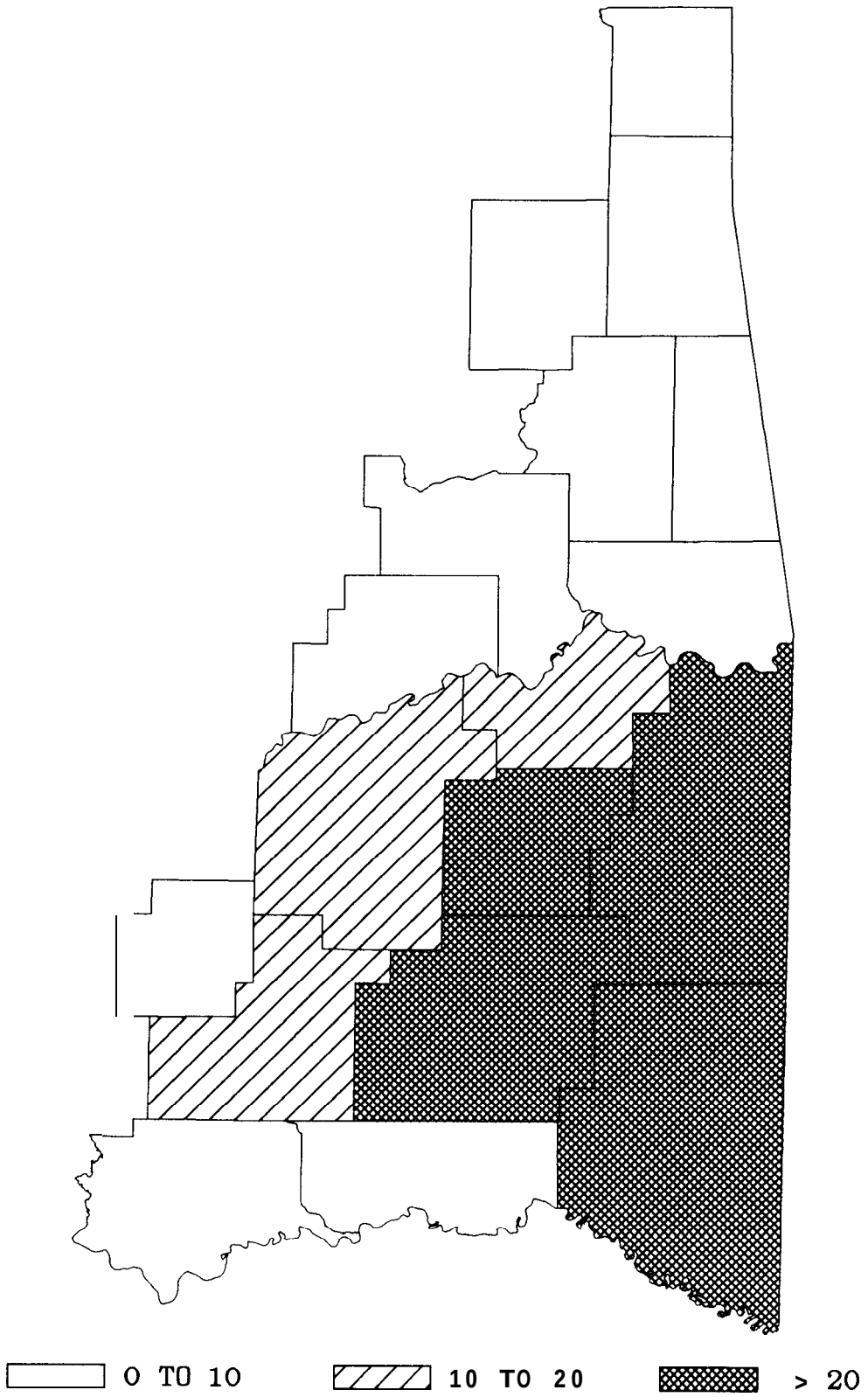

Figure 24.—***Average*** *softwood basal area per acre on timberland by county, in square feet, east Oklahoma, 1993.*

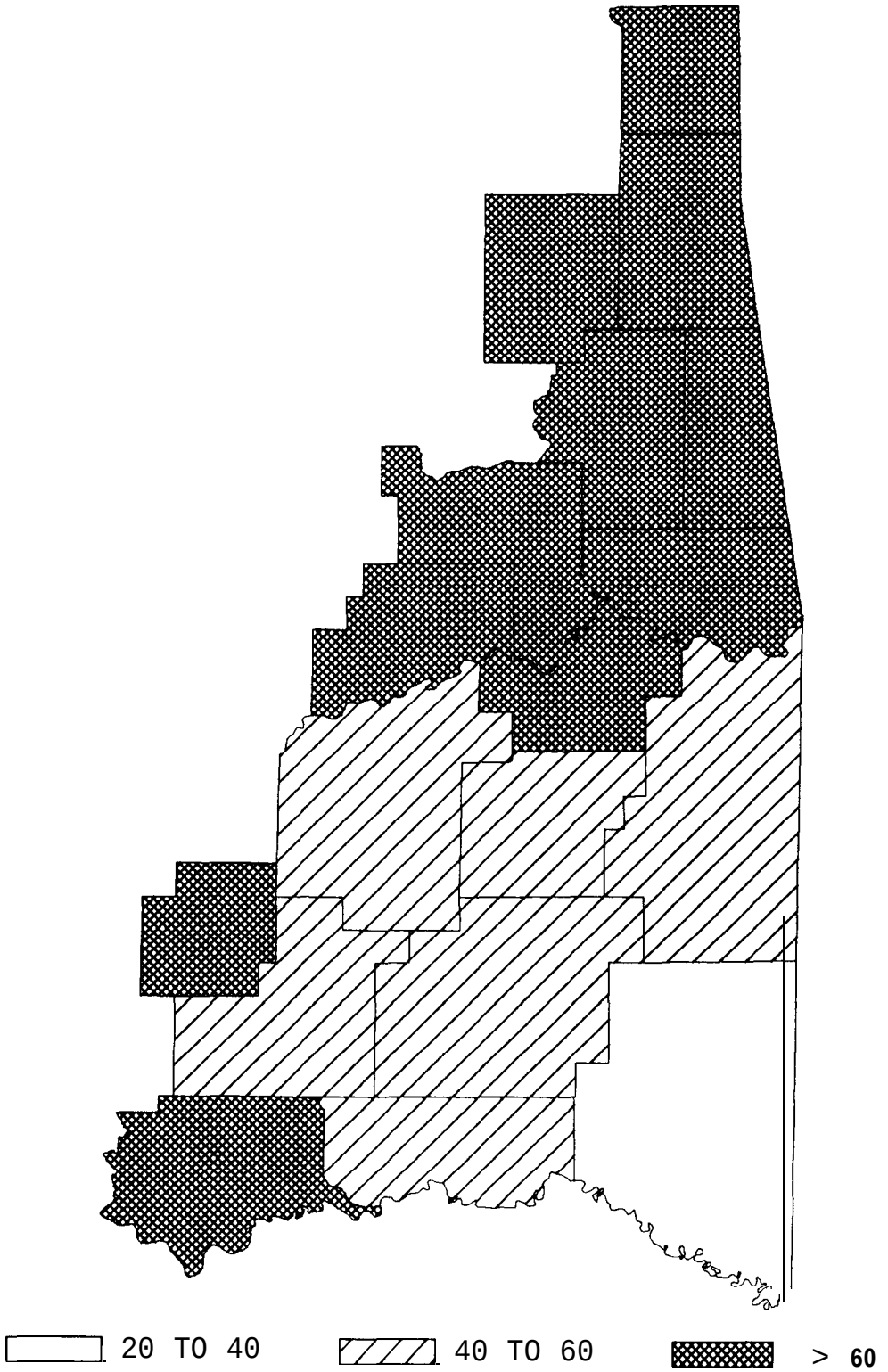

Figure Z.-*Average hardwood basal area per acre on timberland by county, in square feet, east Oklahoma, 1993.*

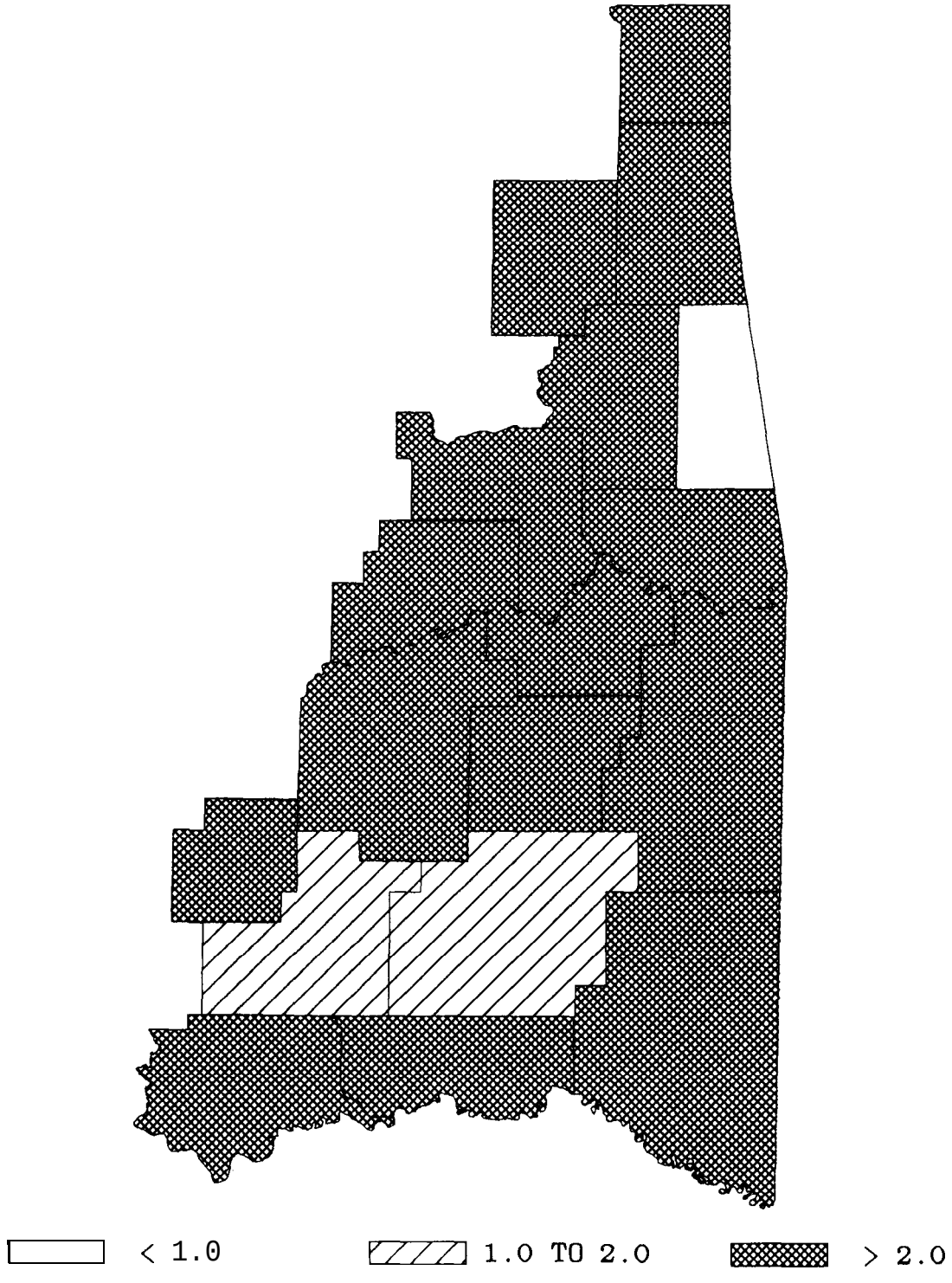

Figure *26.-Ratio of average net annual growth to average annual removals of growing-stock for softwood by county, east Oklahoma, 1993. A value greater than 1.0 indicates more growth than removals; a value less than 1.0 indicates more removals than growth.*

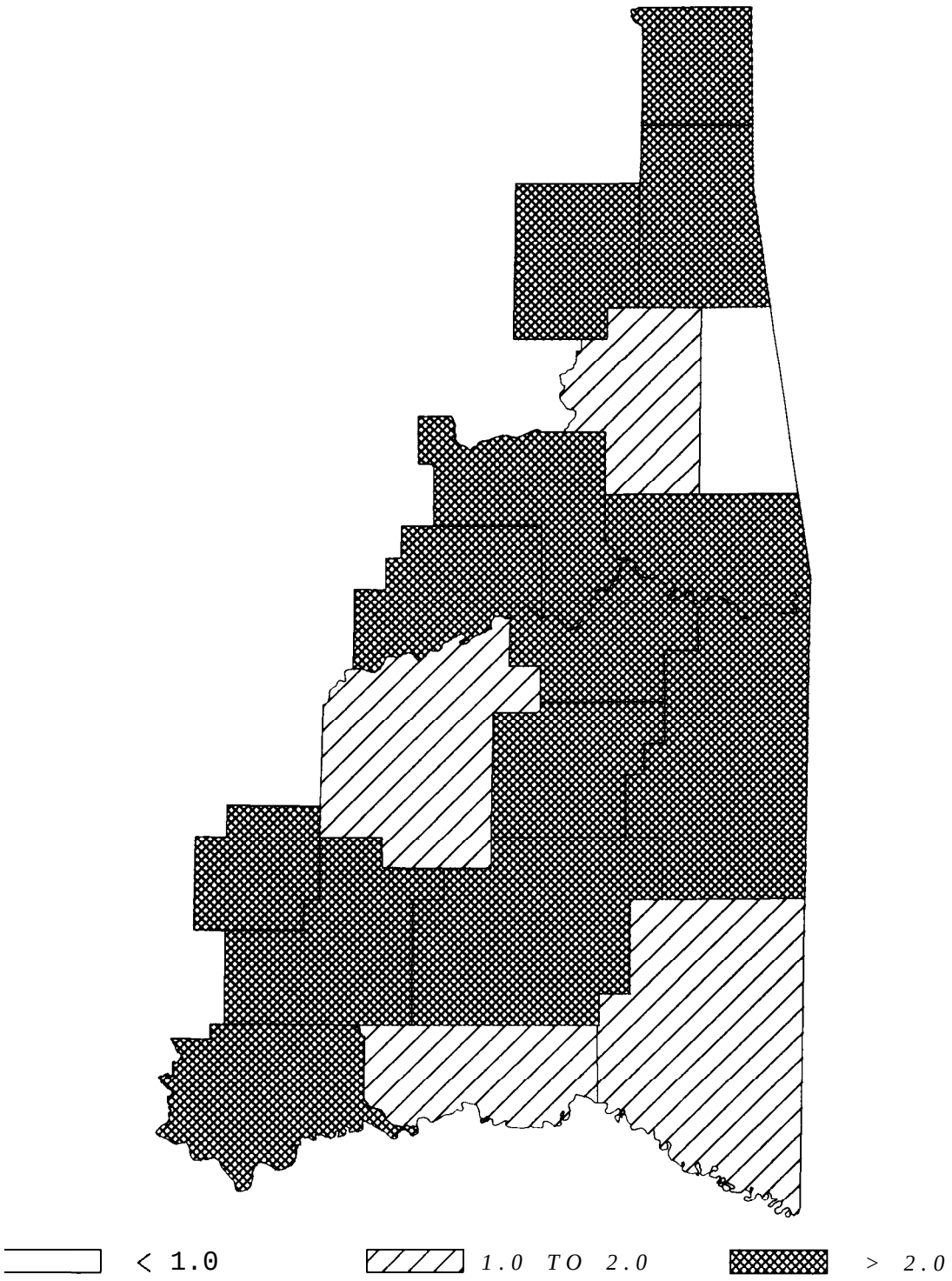

Figure 27.-*Ratio of average net annual growth to average annual removals of growing-stock for hardwoods by county, east Oklahoma, 1993. A value greater than I.0 indicates more growth than removals; a value less than 1.0 indicates more removals than growth.*

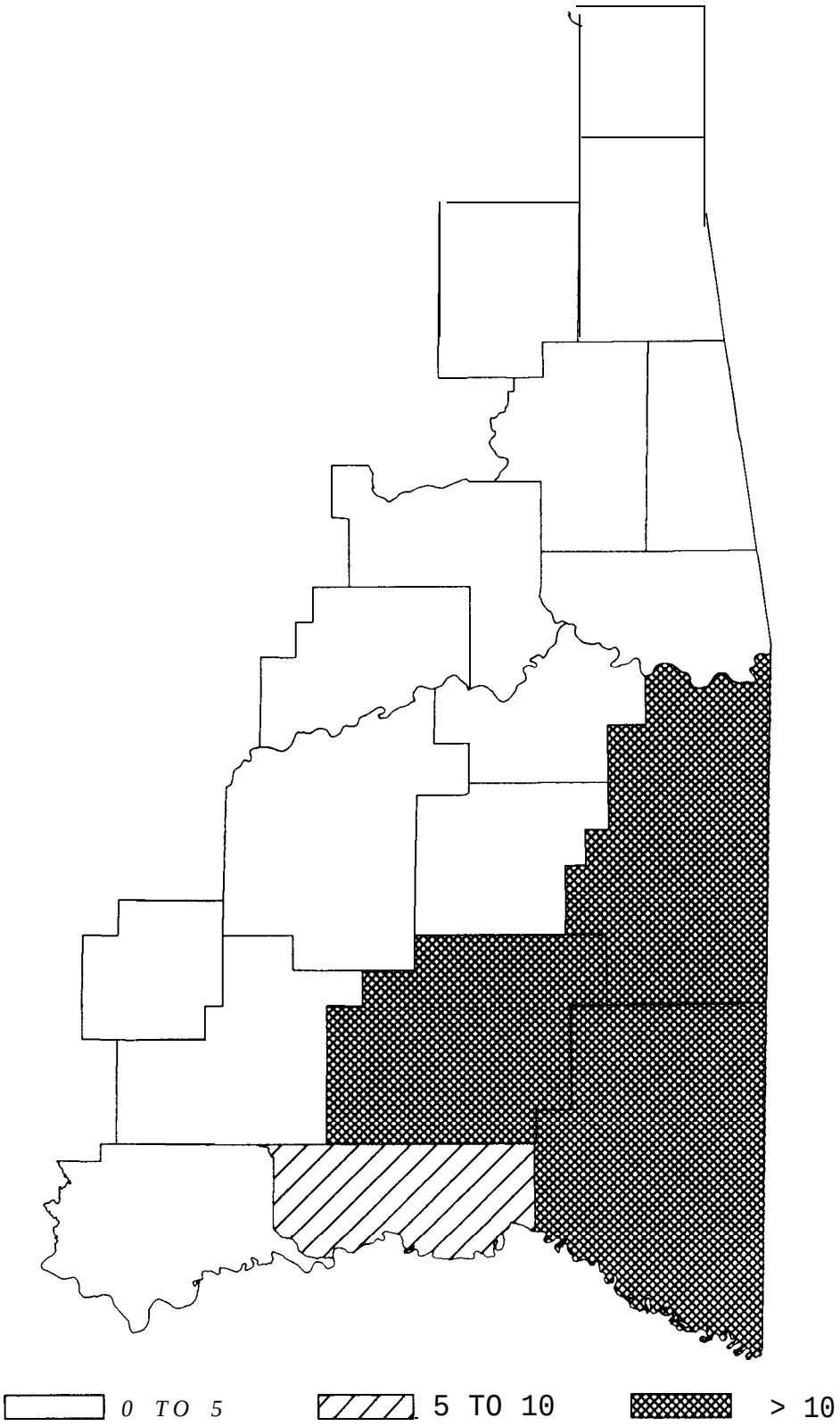

Figure 28.—*Percent timberland by county with evidence of artificial regeneration, east Oklahoma, 1993.*

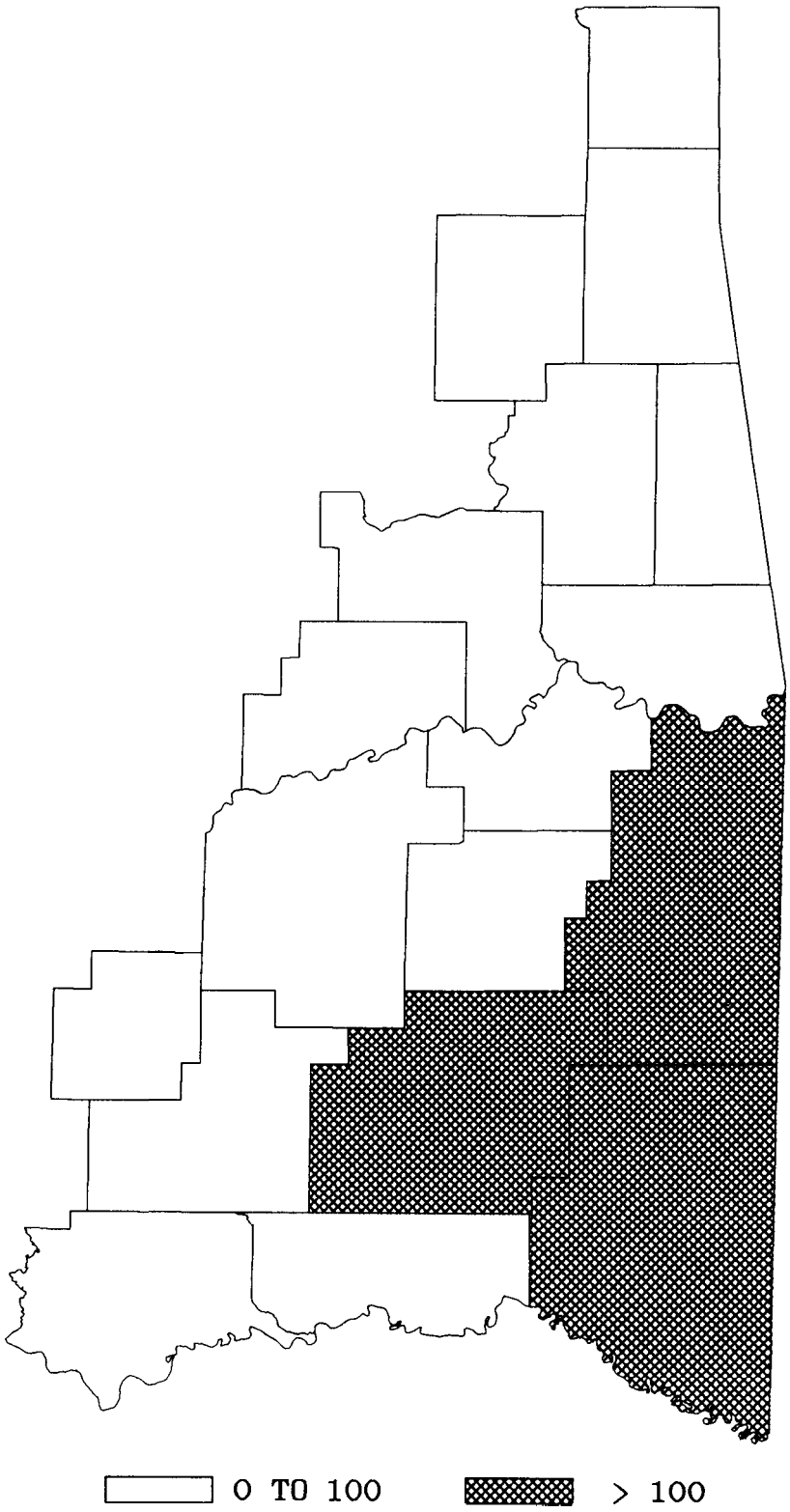

Figure *29.-Area of timberland by county with evidence of artificial regeneration in thousand acres, east Oklahoma, 1993.*

Miller, Patrick E.; Hartsell, Andrew J.; London, Jack D. 1993. Forest statistics for east Oklahoma counties-1993. Resour. Bull. SO-177. New Orleans, LA: U.S. Department of Agriculture, Forest Service, Southern Forest Experiment Station. 57 p.

Tabulates forest resource information from a new inventory of the east counties of Oklahoma.

Keywords: Area, forest type, ownership, stand size, volume.

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