

OSU
Collection

FORESTRY IN THE OKLAHOMA ECONOMY

Bulletin B-724
AGRICULTURAL EXPERIMENT STATION
OKLAHOMA STATE UNIVERSITY

May, 1976

CONTENTS

Forest Resource	5
Location of Oklahoma's Forests	5
Commercial Forest Land	6
Type of Timber	6
Volume of Timber	6
Timber Harvest	10
Potential of Oklahoma's Forests	10
Noncommodity Forest Resources	14
Forest Products Industry	18
Employment	18
Payroll	20
Value Added	20
Value of Shipments	20
New Capital Expenditures	20
Oklahoma Forestry Division	21
Department of Forestry, Oklahoma State University	24
Summary	26
References	27

Forestry in the Oklahoma Economy

G. H. Weaver and Philip L. Tedder*

This research provides general information and background material about the forest land of Oklahoma and its importance to the economy of Oklahoma, especially in our easternmost counties. There are forested acres in every county of Oklahoma; in three counties, more than 75 percent of the total land area is classified by the United States Forest Service as commercial forest land. In 1972, McCurtain County in southeastern Oklahoma was the second largest shipper of pulpwood in the southern United States. Oklahoma also produces quality veneer logs, lumber, poles, pilings, and fence posts.

Forestry in Oklahoma is truly a dynamic enterprise worthy of high recognition. Its importance has steadily increased over the past decade and will continue to grow and become even more economically important to the state in the future.

This publication will introduce you to the location of Oklahoma's forests, the industries supported by the forests, the employment provided by these industries, the value added and wages paid by this industry group, and other facts pertaining to the forests of Oklahoma.

Forest Resource

Location of Oklahoma's Forests

Of the 40,965,296 acres of land in agricultural use in Oklahoma, 8,580,907 acres are forested. Of this 8.6 million acres, approximately 64 percent, or 5.5 million acres, is located in 17 eastern counties. Forestry reaches every Oklahoman. Timberlands are located in every county in Oklahoma ranging from 1000 acres in Harper County to 874,500 acres in McCurtain County. Figure 1 represents the distribution of forest land, crop land, pasture land, range land, and other land that is present

*Assistant Professor, Forestry Department, and Graduate Assistant, Agricultural Economics Department, respectively.

Reports of Oklahoma Agricultural Experiment Station serve people of all ages, socio-economic levels, race, color, sex, religion and national origin.

in Oklahoma. The percentages were determined from total acreages in use for agricultural purposes and excluded acreages included in federal non-cropland, urban and built-up areas, and small water areas. Zone III contains 57 percent of all forest land in the State, Zone II contains 38 percent, and Zone I contains 5 percent. In three counties of Zone III, more than 75 percent of the total area is forest land; in 6 counties of Zone II, 50 to 74 percent of the total area is in forest land, and in 20 counties of Zones II and III, 25 to 49 percent of the total area is forest land (Figure 2).

Commercial Forest Land

The majority of Oklahoma's commercial forest land is located in 17 eastern counties (Zone III of Figure 1). Of the 9,918,100 acres in these 17 counties, approximately 55 percent, or 5.5 million acres, is in timberland. Of that 5.5 million acres 88 percent, or 4.8 million acres, is classified as commercial timber by the United States Forest Service. Commercial forest is defined as forest land capable of producing at least 20 cubic feet of industrial wood per acre annually.

Farmers and other private owners hold 70 percent of that total commercial forested area. In addition, 18 percent is held by forest industry, and 7 percent is held by other public owners such as the Corps of Engineers, the Oklahoma Wildlife Commission, and Oklahoma's State Parks. The national forests comprise 5 percent of the total (Figure 3).

Type of Timber

Oklahoma is as much varied in its timber species as it is in its land types. There are four species of softwoods that make up the pine category and there are over 14 hardwood species. Table 1 lists the makeup of Oklahoma's commercial forest in percentages of growing stock and sawtimber. Growing stock is defined as sawtimber trees, poletimber trees, saplings, and seedlings—that is, all live trees except rough and rotten trees. Growing stock is measured in cubic feet. Sawtimber can be defined as those live trees of commercial species, 9.0 inches and larger in diameter at breast height (dbh) for softwoods, and 11.0 inches and larger (dbh) for hardwoods, and containing at least one sawlog. Sawtimber is measured in board feet. Shortleaf pine leads the way in growing stock with 43.7 percent, and it also comprises 51.6 percent of all sawtimber.

Volume of Timber

The volume of growing stock in Oklahoma is increasing. Large investments from private industry have initiated more intensive manage-

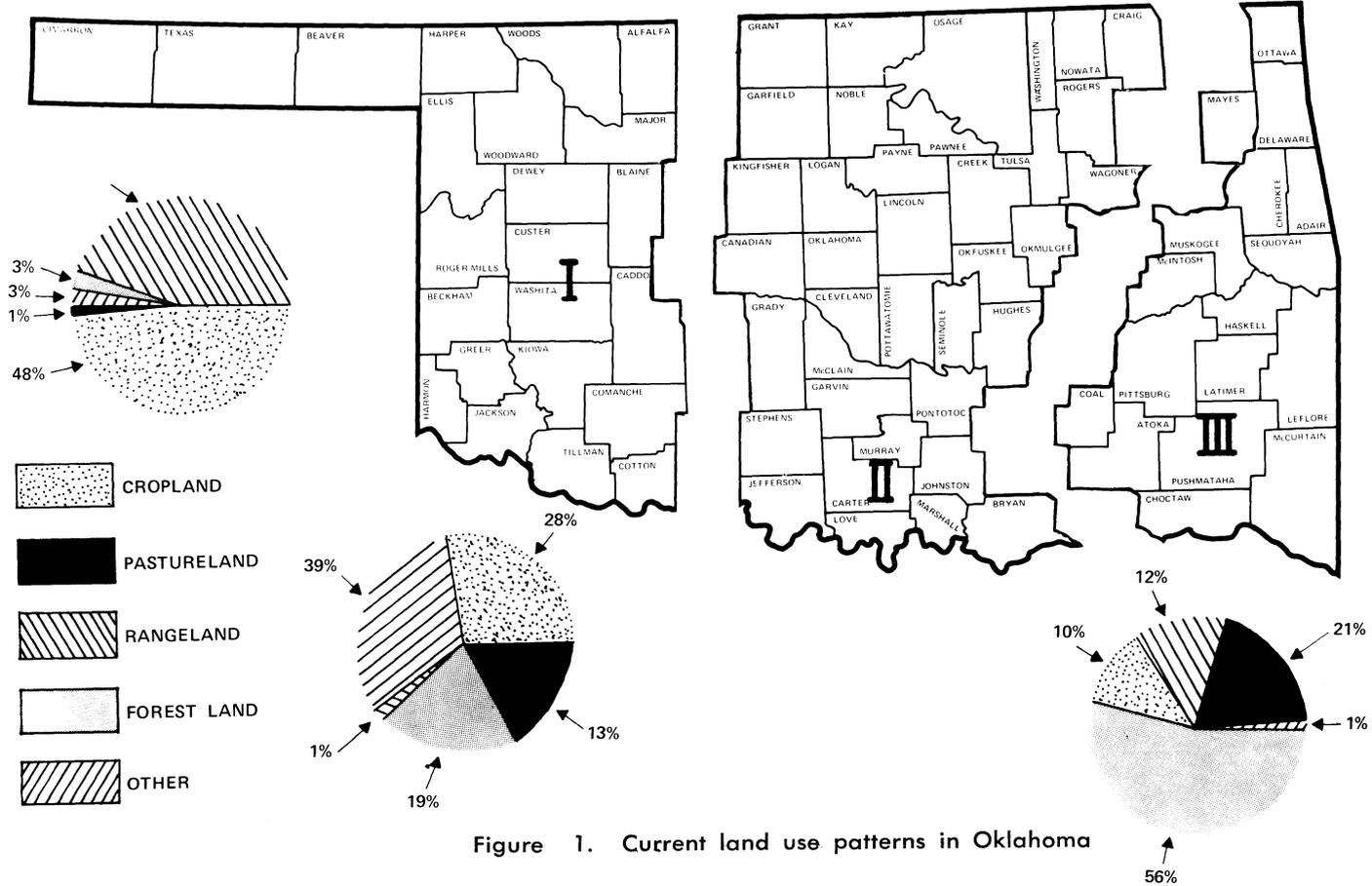


Figure 1. Current land use patterns in Oklahoma

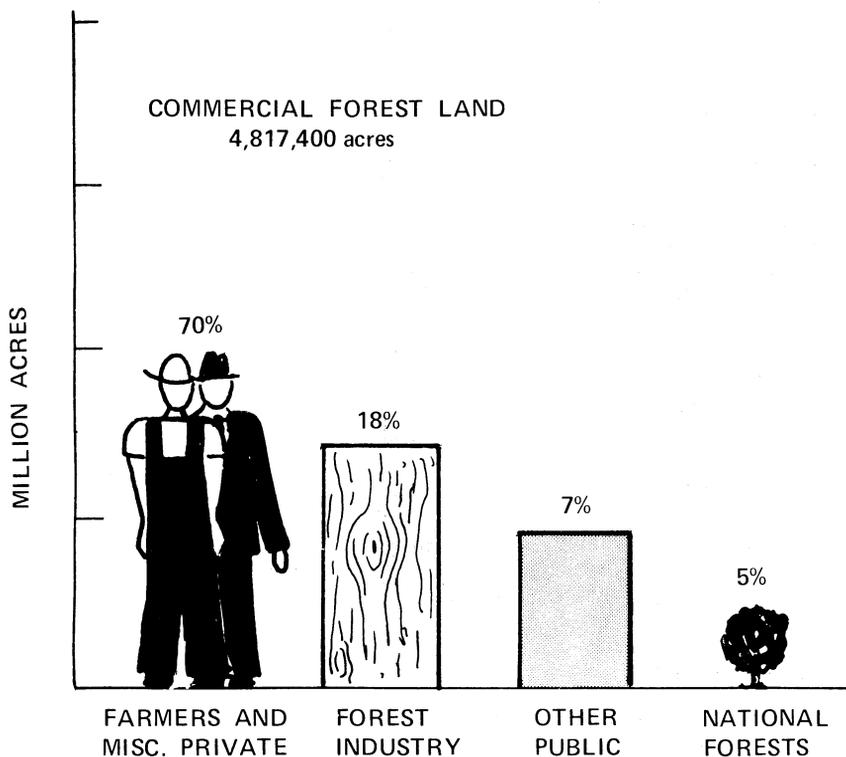


Figure 3. Commercial forest land ownership in Oklahoma

ment for higher production. The 1971 inventory of growing stock consisted of 52 percent pine and 48 percent hardwood (Figure 4). The total growing stock increased from 1.6 billion cubic feet in 1966 to 1.7 billion cubic feet in 1971, a 6 percent increase in 5 years. It can be seen from Figure 5 that the pine growing stock actually made up the entire percentage change in growing stock as hardwood growing stock decreased during the 5-year period.

Pine sawtimber inventory exceeded hardwood sawtimber by 1.2 billion board feet in 1971 (Figure 6). Sawtimber inventory increased from 43 billion board feet in 1966 to 4.5 billion board feet in 1971, a 4 percent increase. Figure 7 shows that pine accounted for the entire increase from 1966 to 1971 in sawtimber volume as hardwood volume again decreased.

Table 1. Species of Oklahoma's Commercial Forests Growing Stock and Sawtimber

Types and Species	Percentage of Growing Stock	Percentage of Sawtimber
Softwoods		
Loblolly Pine	3.70	6.20
Shortleaf Pine	43.70	51.60
Cypress	.05	.06
Redcedar	.20	.18
Hardwoods		
Select White Oaks ¹	4.40	2.80
Select Red Oaks ²	1.90	1.90
Other White Oaks	12.20	8.10
Other Red Oaks	10.80	8.70
Hickory	7.40	5.90
Hard Maple	.19	.19
Soft Maple	.33	.17
Sweetgum	2.90	2.30
Tupelo Blackgum	1.40	1.50
Ash	2.20	1.60
Cottonwood	1.00	.90
Basswood	.08	.40
Black Walnut	.30	.20
Other	7.20	7.30
Total	100%	100%

¹ Includes white, swamp chestnut, chinkapin, and liveoak.

² Includes cherrybark, shumard, and northern red oaks.

Timber Harvest

In 1972 Oklahoma's timber harvest was 64.4 million cubic feet of industrial roundwood. Table 2 lists the timber harvested by product classes. McCurtain County produced 44.3 million cubic feet of industrial roundwood or about 68 percent of the state's total production. Pushmataha and LeFlore Counties produced 7.2 and 1.2 million cubic feet of industrial roundwood respectively. These three counties produced more than 80 percent of Oklahoma's 1972 industrial roundwood harvest. The 1972 timber harvest of 64.4 million cubic feet represents an increase of 50 percent over the 1965 timber harvest.

Potential of Oklahoma's Commercial Forests

Presently, net annual forest growth is about 13 cubic feet per acre, but Oklahoma's commercial forest lands are capable of producing about 50 cubic feet per acre per year (Figure 8). Under present conditions the average per acre removal is about 11 cubic feet. Growth and removals are nearly balanced (Figure 8). A coordinated effort will be required if the state expects to utilize the growth potential of Oklahoma's forest lands in industrial development programs. The proper ingredients to achieve this potential in Oklahoma's forests are now present. The man-

Table 2. Volume of Industrial Roundwood, 1972

Product	Standard units	Volume in standard units			Roundwood volume		
		All species	Softwood	Hardwood	All species	Softwood	Hardwood
						<i>M cu. ft.</i>	
Saw logs	M bd. ft. ¹	169,249	143,630	25,619	27,898	23,627	4,271
Veneer logs	M bd. ft. ¹	42,155	37,877	4,278	6,949	6,231	718
Pulpwood	Std. cords	285,654	190,791	94,863	23,043	15,454	7,589
Poles and piling	M pieces	196	196	---	762	762	---
Posts	M pieces	5,774	5,774	---	3,568	3,568	---
Misc. products ²	M cu. ft.	2,202	---	2,202	2,202	---	2,202
Total					64,422	49,642	14,789

¹ International ¼-inch rule.² Includes chemical wood, handlestock, and excelsior.

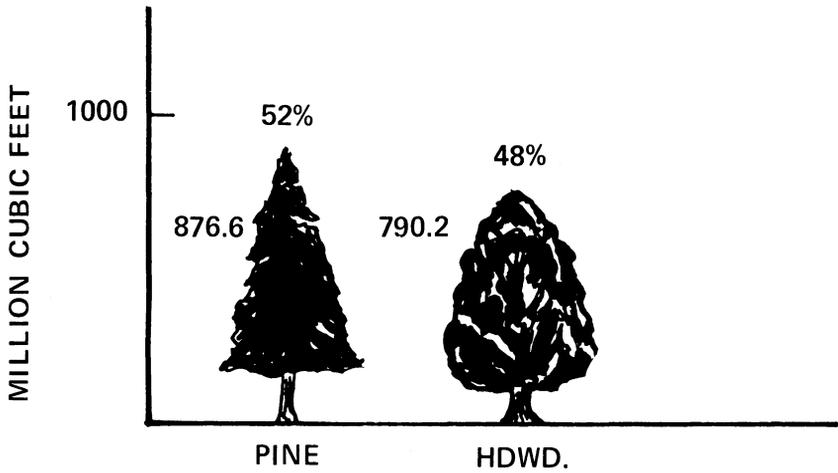


Figure 4. Growing stock by species group in Oklahoma, 1971

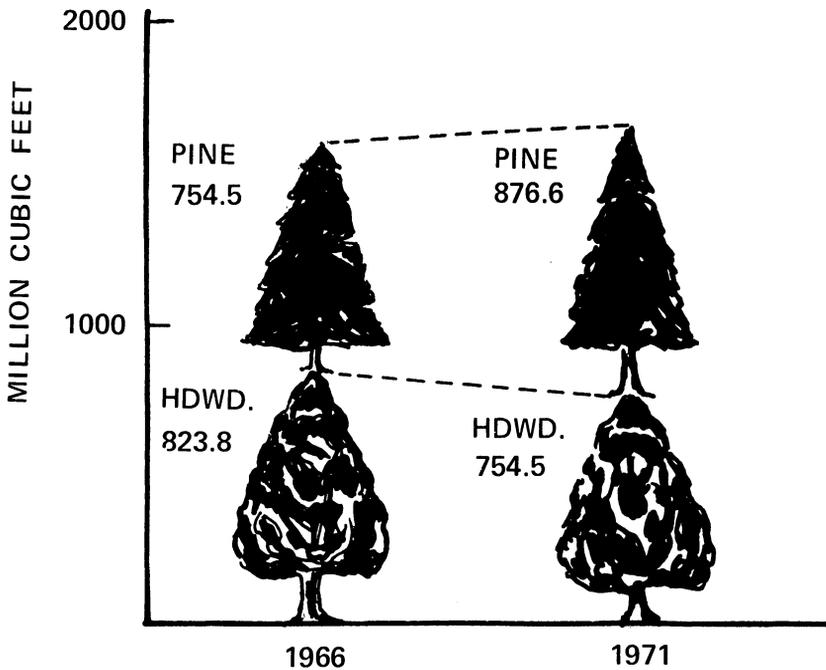


Figure 5. Changes in Oklahoma growing stock by species group from 1966 to 1971

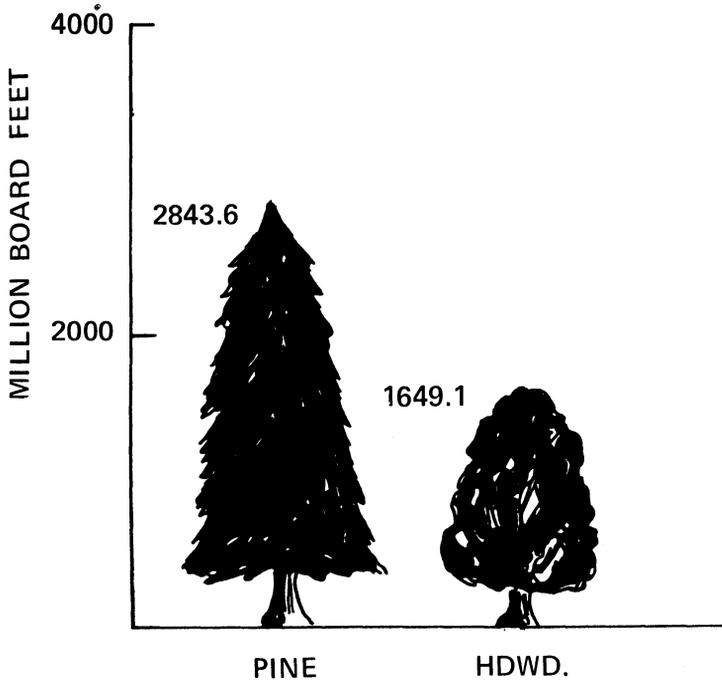


Figure 6. Sawtimber volume by species group in Oklahoma, 1971

agement techniques are available but these techniques must be combined with the proper amount of land, capital, and leadership to realize this potential. The forest resource data required for development planning will be available when the U.S. Forest Service completes the resurvey of Oklahoma's forest resources in 1976-77.

Oklahoma's black walnut resource presents an outstanding forest management opportunity. Based on available inventory data there are about 5 million cubic feet of black walnut growing stock. This resource, with intensified management, could return 50 to 100 million dollars to Oklahoma forest landowners during the next quarter century. The beauty and utility of Oklahoma walnut can be seen in the trim work of the historic Rogers' family home at Will Rogers State Park.

There would seem to be significant opportunities for increased levels of quality hardwood production in northeast Oklahoma and perhaps even expansion of furniture manufacturing enterprises if high quality hardwood supplies are available. In southeast Oklahoma intensification of southern pine management is an opportunity available to all ownership groups.

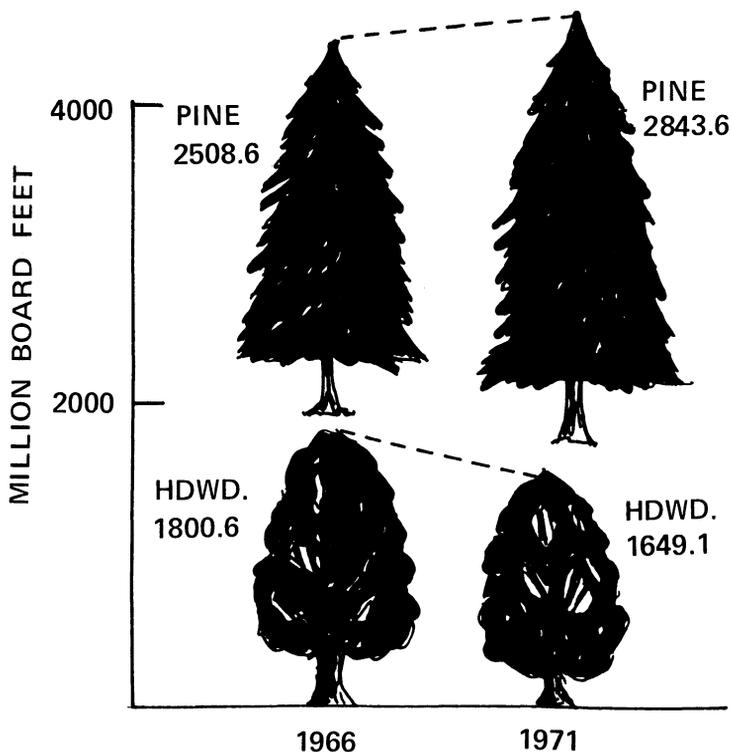


Figure 7. Changes in Oklahoma sawtimber volume by species group from 1966 to 1971

Cottonwood plantation management opportunities will be expanded as specialized markets continue to develop this fast-growing species. The versatility of cottonwood makes it suited for a variety of industrial uses. Its rapid growth permits complete crop rotation in 6 to 20 years. This short planning horizon of 6 to 20 years permits landowners to greatly minimize time—a major drawback to many forestry investments.

Noncommodity Forest Resources

It is rather easy to measure a tree or a load of logs to determine volume and then calculate the value of the volume in terms of today's market. But how do you calculate the value of a day spent hiking in the forest, or the sight of deer or turkey in morning's early light, or the panorama of fall colors in the forested regions? These values are different for each person but they are real for anyone who visits the forest.

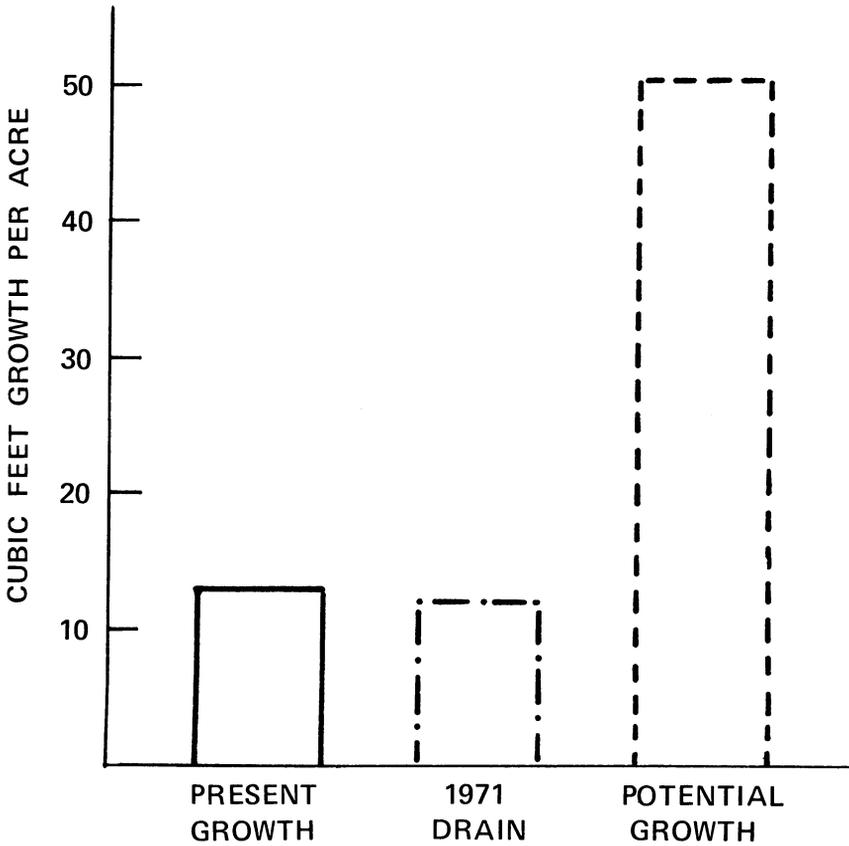


Figure 8. Oklahoma's present timber growth and drain situations contrasted with potential growth, per acre

These experiences are eagerly sought by Oklahoman's. In a report prepared for the Oklahoma Industrial Development and Parks Department, recreation regions 2, 3, and 4 provided more than 50 percent of the resource-based recreation opportunities for Oklahomans (Figure 9).

This combination of environment, precipitation, forests and water resources provides the setting that Oklahomans demand for outdoor recreation opportunities. These recreation resources and forest wildlife resources may be maintained and expanded with a higher level of forest management on all Oklahoma forest lands.

The ability of the forest to modify extremes in ground water levels is a major forest benefit. The potential of forest management to increase or influence water yields from the forest watersheds will become

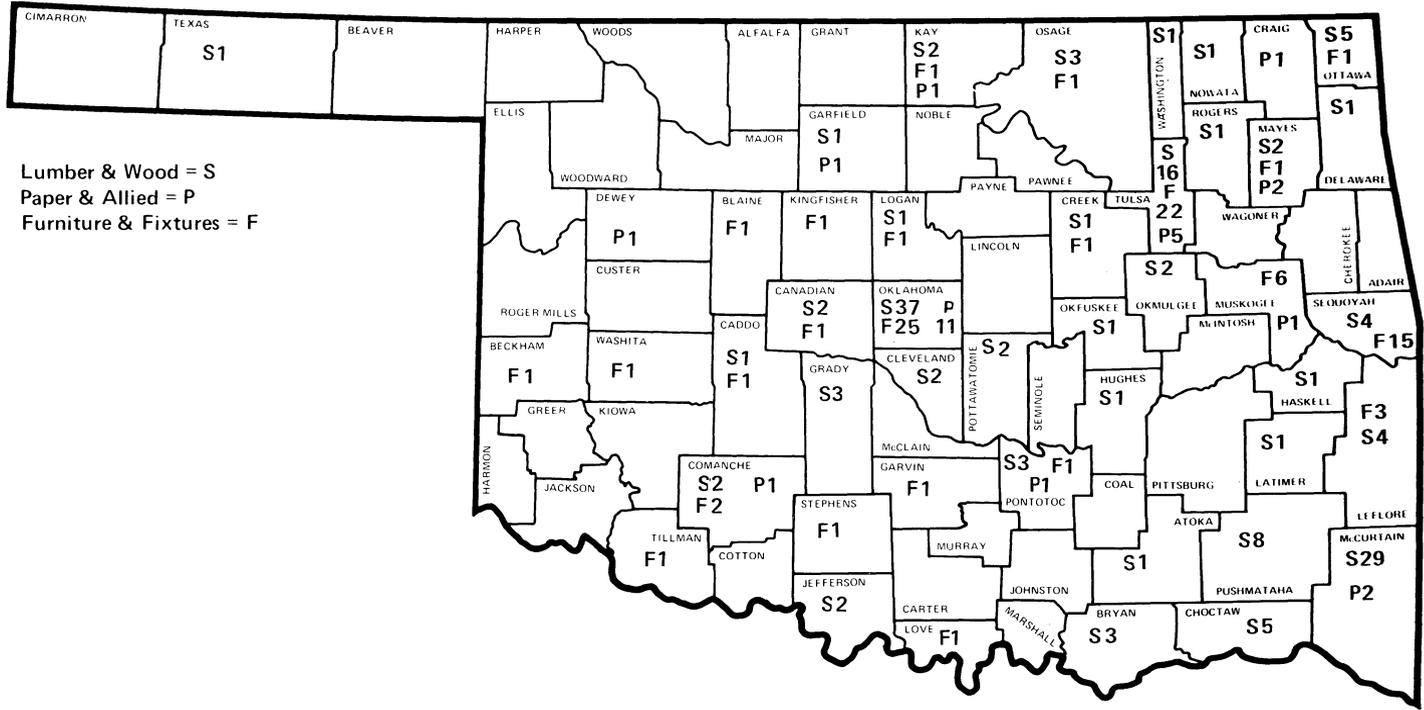


Figure 10. Oklahoma's forest products industries

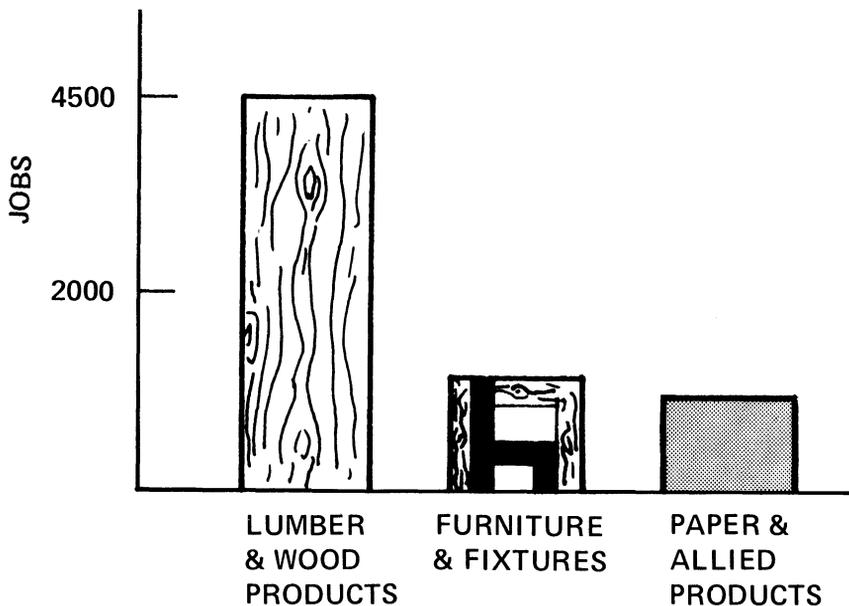


Figure 11. Forest products industry employment in Oklahoma, 1972

more significant as water resources become scarce and at times critical. Such benefits will become a major asset in providing a regulated flow of surface water to meet expanding water needs in Oklahoma.

Forest Products Industry

Employment

The forest products industry is a significant factor in the employment of Oklahomans. It provided 8,100 jobs in 1972.

This industry can be divided into three major categories: Lumber and Wood Products (SIC Code 24); Furniture and Fixtures (SIC Code 25) and Paper and Allied Products (SIC Code 26). There are 154 establishments in the lumber and wood products industry, 89 in the furniture and fixtures industry, and 28 in the paper and allied products industry. Figure 10 shows the distribution of these establishments by county.

In furniture and fixtures as well as in paper and allied products, employment rose from 2,500 in 1967 to 3,700 in 1972; a 48 percent increase in just 5 years. In the lumber and wood products sector, employment increased from 1,600 employees in 1970 to 4,400 in 1972. This was a 175 percent increase. If the trends exhibited by these statistics con-

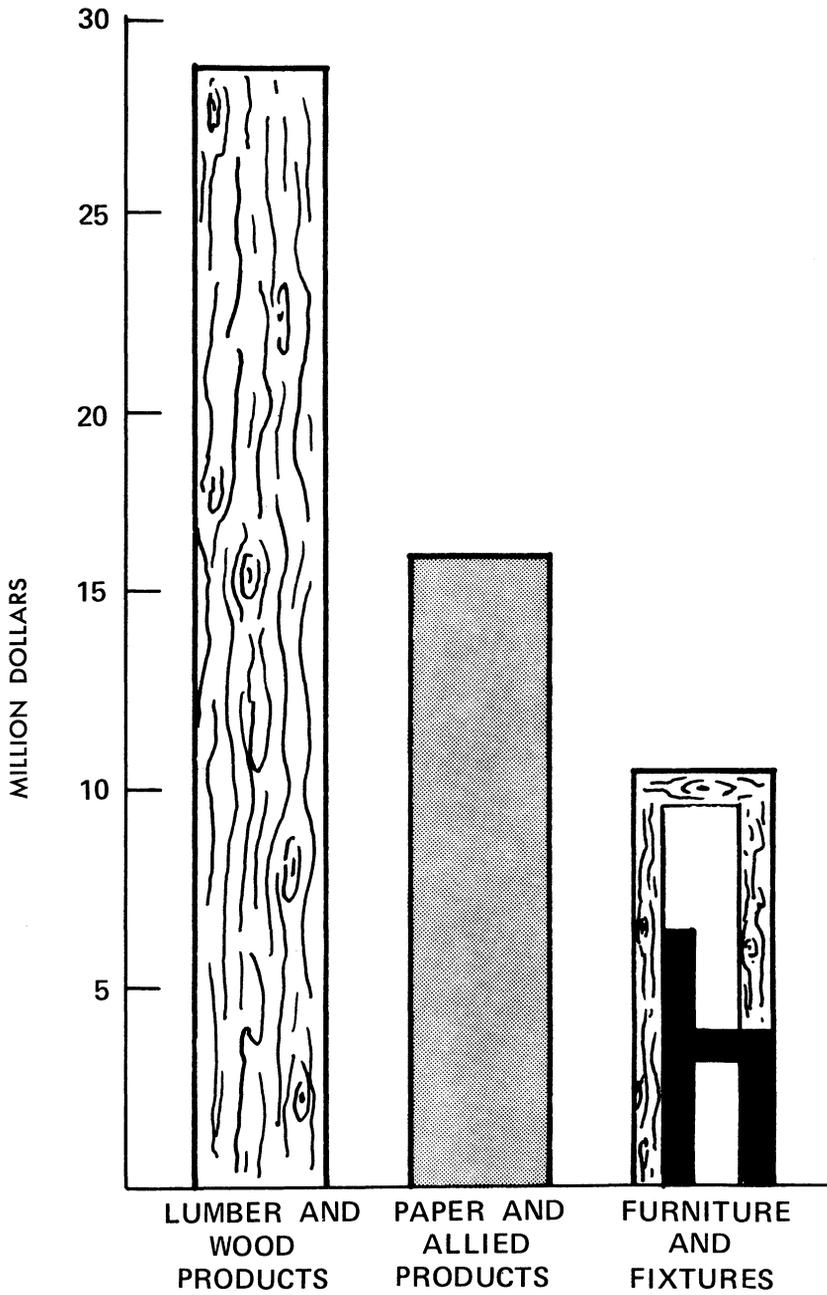


Figure 12. Oklahoma's forest products industries payroll, 1972

tinue, the forest products industry will provide for more employment opportunities in the future (Figure 11).

Payroll

The Oklahoma payroll in 1972 for those employed in the forest products industry was 56 million dollars. This is in itself a significant amount; it is up 87 percent from the 1970 payroll. Lumber and wood products led the way in payroll with 49.1 percent, paper and allied products were the second highest with 29.5 percent, and furniture and fixtures were last with 21.4 percent (Figure 12).

Value Added

Value added is the difference between cost of goods purchased by an enterprise and the value of the product it sells. It is roughly equivalent to the amount of income earned or originating in that activity and represents that activity's contribution to gross national product.

In Oklahoma the value added by forest products manufacturing in 1972 was 138.3 million dollars—a 65 percent increase over 1970. Again, lumber and wood products led the way with 51.8 percent, paper and allied products were next, contributing 32.9 percent, and furniture and fixtures were at 16.1 percent (Figure 13).

Value of Shipments

The value of shipments is the total value of all materials produced by the forest products industry whether they were consumed in the state or shipped out of state. The value of shipment in Oklahoma for 1972 totaled 322.5 million dollars. This is an increase of over 175 million dollars in a two-year period.

Lumber and wood products were also first in this category with 49.8 percent, paper and allied products were second with 36.7 percent, and furniture and fixtures were in at 13.5 percent (Figure 14).

New Capital Expenditures

Capital expenditures represent that money which is invested by the manufacturer in items which enable him to operate on a sustained basis. Capital expenditures in 1972 for lumber and wood products and for furniture and fixtures were 11.4 million and 1.4 million dollars respectively. Capital expenditure figures for paper and allied products were not available at this time for 1972. However, an expenditure of 30.4 million dollars was made for this category in 1970 (Figure 15).

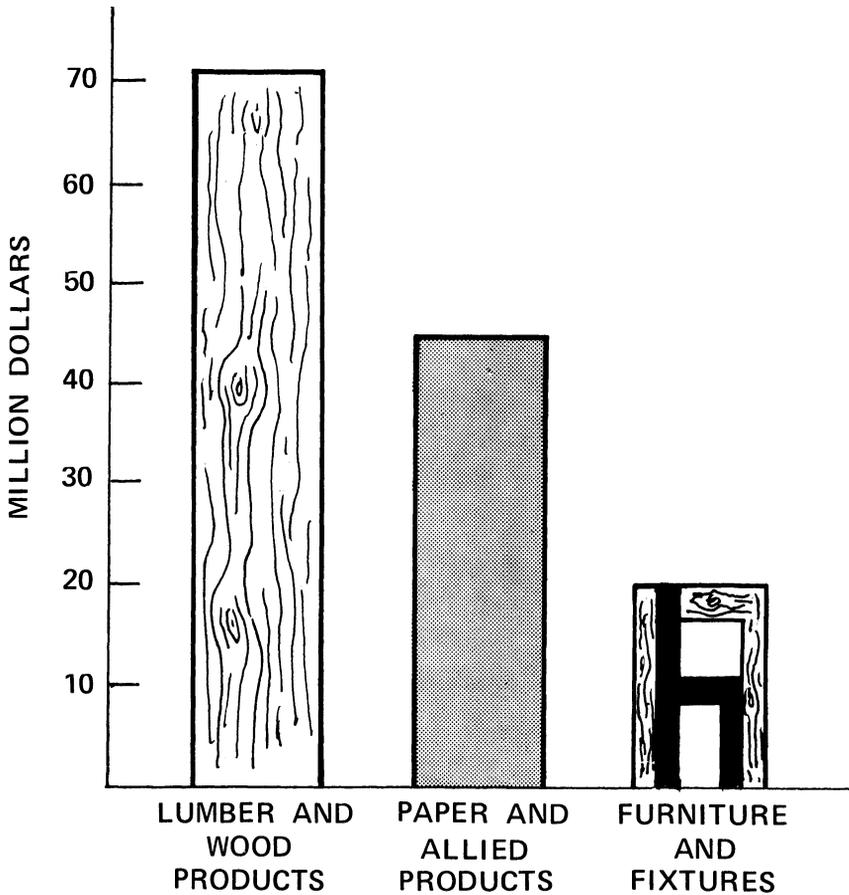


Figure 13. Value added by Oklahoma's forest products industries, 1972

Oklahoma Forestry Division

The State of Oklahoma fully realizes the vital importance of forestry in Oklahoma. The Oklahoma Forestry Division which operates under the Oklahoma Department of Agriculture has responsibility for the protection of Oklahoma's forest land from fire and to give forest land management advice to those who seek it. The professional foresters range the entire state to give professional advice in forest management to farmers and other Oklahomans who have forested land on their property. The fire protection area in Oklahoma encompasses approximately

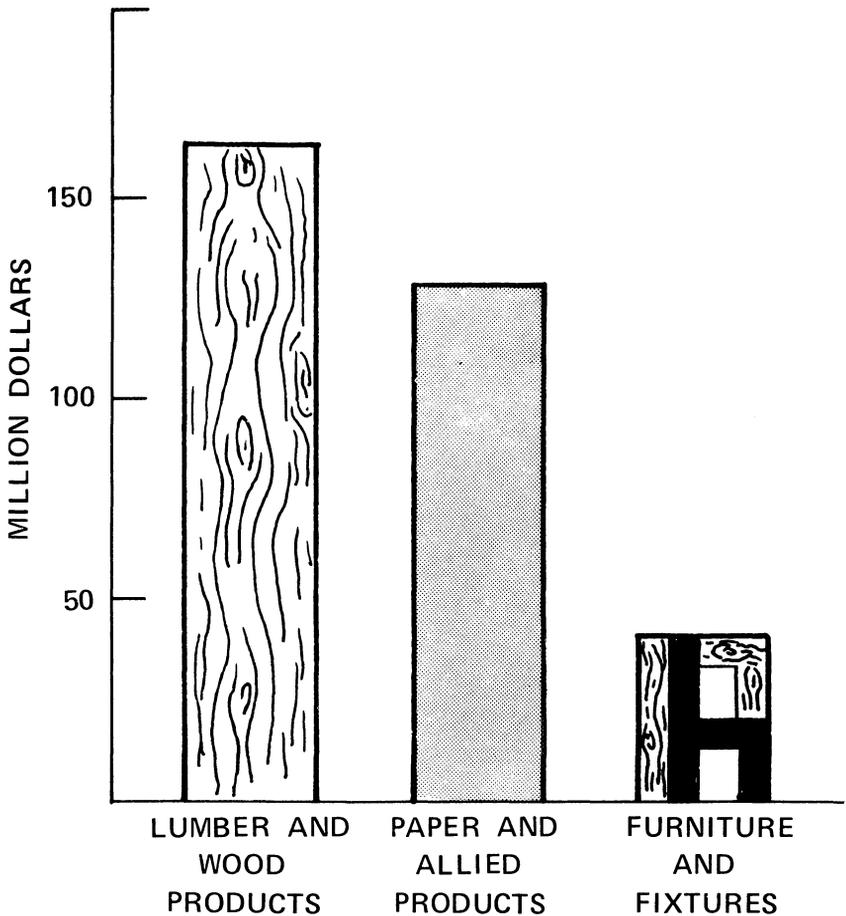


Figure 14. Value of shipments in Oklahoma's forest products industry

five million acres. The Forestry Division supports an annual payroll of approximately \$1,000,000.

The Forestry Division has approximately 145 employees of which 19 are professional foresters. Division of forestry offices are located in the cities of Tahlequah, Jay, Wilburton, Talihina, Antlers, Broken Bow, Battiast, Duncan, Clinton, Norman, and Oklahoma City (Figure 16).

In addition, the Forestry Division has charge of the total vegetative management on all of the Corps of Engineer's projects. This includes the planting of grass, trees, and shrubs in every recreation area in the state under the jurisdiction of the Corps of Engineers. The Forestry

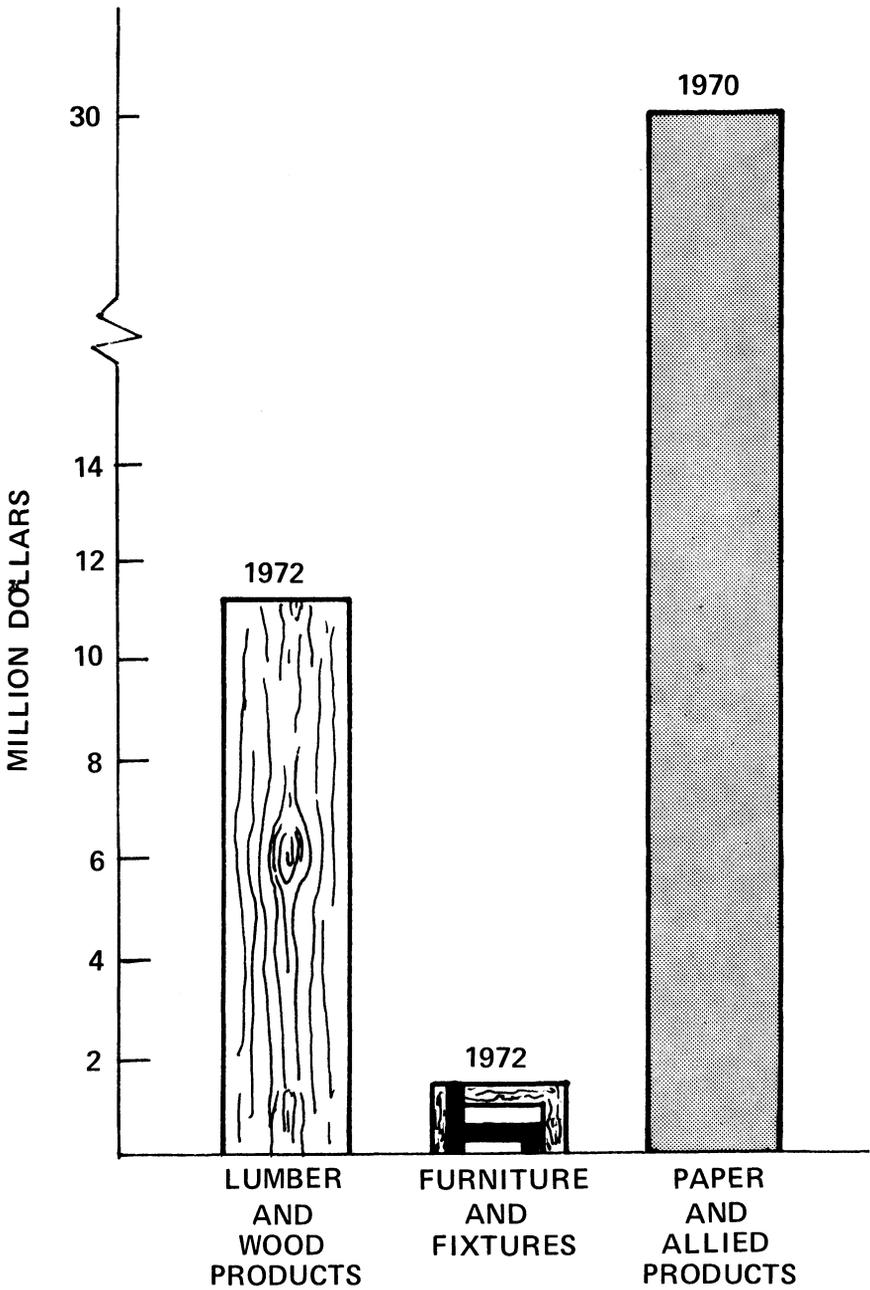


Figure 15. Capital expenditures in Oklahoma's forest products industries

Division also operates two state nurseries which are the supply for many commercial forest tree planters and are also the supply to any Oklahoman who desires to plant trees or shrubs on his land for forestry or wildlife purposes.

Department of Forestry, Oklahoma State University

The Department of Forestry offers an undergraduate program in the field of Resource Management, with options entitled Forest Management, Forest Recreation, Forest Business, Forest Science, and Urban Forestry. The Society of American Foresters accredited the program in September 1971. The average enrollment in this program for the past three years has been about 240 students. Instruction is handled by a department faculty of eight persons and an associate faculty of six persons from other departments of Oklahoma State University.

The program's goal is to train and educate young persons for professional forestry careers in public service, teaching and industry. The majority of the forestry undergraduates are Oklahoma residents. It was a goal of former OSU President Henry G. Bennett to provide the highest quality forestry education to Oklahomans. The program quality is such that the OSU program is accredited by the professional society—The Society of American Foresters. OSU graduates are often employed in Oklahoma but are able to compete throughout North America and the world.

Opportunities for graduate study in the department's Master of Science degree program include Forest Harvesting, Forest Management and Economics, Forest Genetics, Forest Recreation, and Silviculture. The department does not offer a Ph.D. program.

Research programs are active in the fields of tree improvement, forest management-wildlife habitat relationships, forest-soil relations, timber harvesting and recreation management. Funding is provided by the federal McIntire-Stennis Program of Forestry Research, OSU Agricultural Experiment Station, the Weyerhaeuser Company, and the Sarkey's Foundation. Research goals are applied rather than basic in their nature and are aimed specifically at serving the needs of forest landowners so they can produce forest benefits for all Oklahomans.

Department properties include a 160-acre Forest Genetics Research Station with a staff of three, located at Idabel, Oklahoma, a nursery two miles west of Stillwater, a plantation of 2,000 cottonwood trees at the State Nursery at Norman, and numerous field plantings throughout the state.

- SOUTHEAST AREA**
 Area Headquarters—Broken Bow
 District 1 Headquarters—Broken Bow
 District 2 Headquarters—Battiest
 District 3 Headquarters—Antlers
- EAST CENTRAL AREA**
 Area Headquarters—Wilburton
 District 1 Headquarters—Wilburton
 District 2 Headquarters—Talihina
 District 3 Headquarters—Talequah
- NORTHEAST AREA**
 Area Headquarters—Talequah
 District 1 Headquarters—Sallisaw
 District 2 Headquarters—Talequah
 District 3 Headquarters—Jay

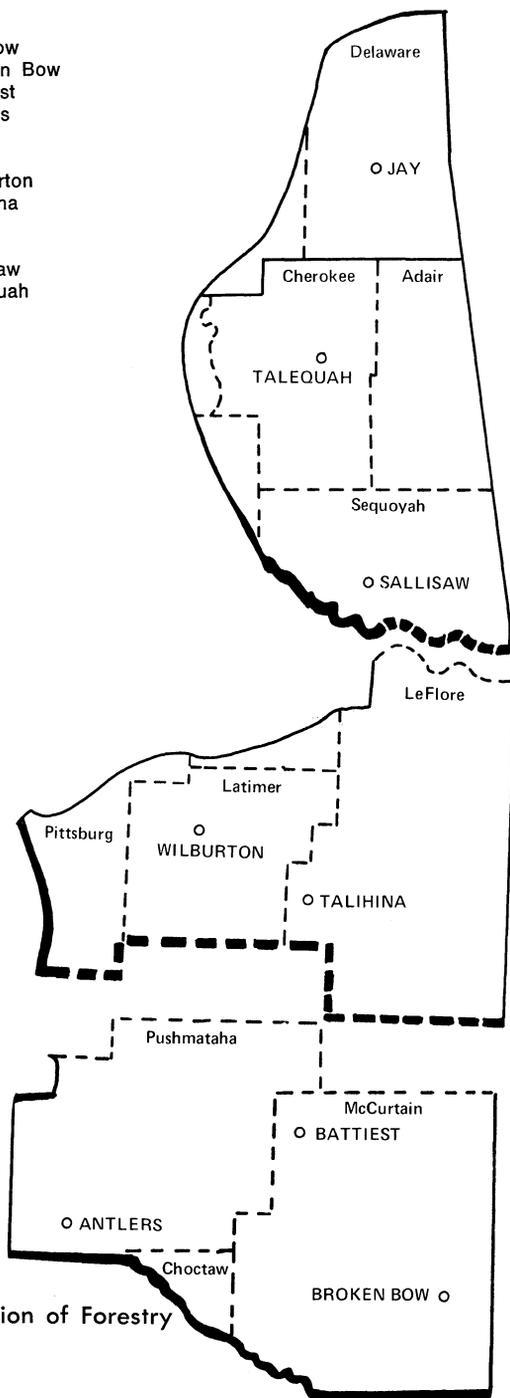


Figure 16. Location of Division of Forestry field offices

Three persons are engaged in extension work in the Forestry Department. One serves in the area of general forestry, one is a wildlife management specialist and a third, residing in Antlers, Oklahoma, specializes in utilization and marketing.

Summary

Forestry and the forest products industry in Oklahoma is and will continue to be a thriving enterprise. In 1972 the total forests products industry employed 8,100 people with an annual payroll of 56 million dollars. The value added by manufacturing was 138.3 million dollars and the value of shipments was 322.5 million dollars. The impact of Oklahoma's forest economy is estimated to be at least 700 million dollars within the state for 1972.

The State Division of Forestry exists to protect Oklahoma's 4.8 million acres of commercial forest land from fire and to provide forest management advice through the 19 professional foresters in the agency.

At Oklahoma State University the Department of Forestry offers training to interested persons for professional forestry careers in public service, teaching and industry. The Department of Forestry offers Bachelor of Science degrees in Forest Management, Forest Business, Forest Recreation, and Urban Forestry, and a Master of Science degree in Forest Resources Management.

The forest product industry and forestry are of vital importance to the economy of Oklahoma. As new management techniques continue to be developed and applied to the forests of Oklahoma, the forest products industry and forestry will continue to grow and become even more important to the economy of Oklahoma.

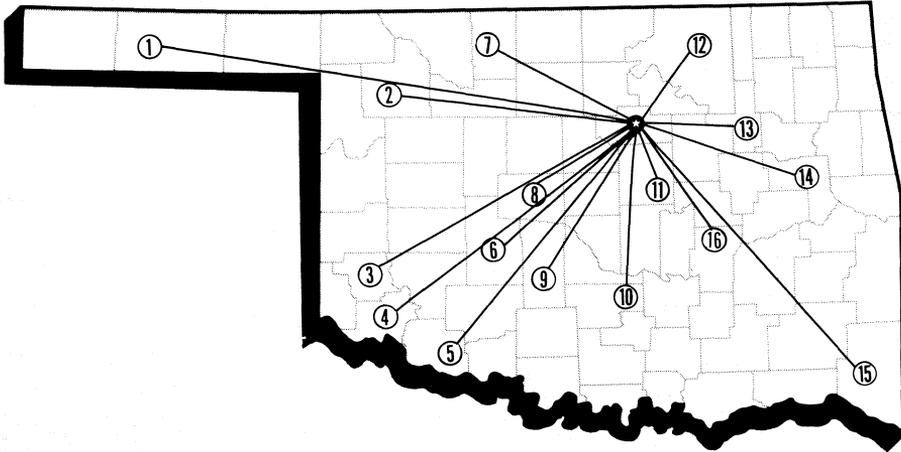
References

1. Bellamy, Thomas R. 1973. *Southern Pulpwood Production, 1973*. U.S.F.S. Resource Bulletin SE-29, Southeastern Forest Experiment Station, Asheville, North Carolina.
2. Beltz, Roy C. and Joe F. Christopher. 1968. *Pole and Piling Production in the Mid-South*. U.S.F.S. Resource Bulletin SO-13, Southern Forest Experiment Station, New Orleans, Louisiana.
3. Bertelson, Daniel F. 1973. *Oklahoma Forest Industries, 1972*. U.S.F.S. Resource Bulletin SO-45, Southern Forest Experiment Station, New Orleans, Louisiana.
4. Brundage, Roy C. 1964. *Forests of Indiana and Their Importance*, Extension Circular 524, Purdue University, Cooperative Extension Service, Lafayette, Indiana.
5. Christopher, Joe F. 1973. *East Oklahoma Product Output and Timber Removals by County*. U.S.F.S. Resource Bulletin SO-45, Southern Forest Experiment Station, New Orleans, Louisiana.
6. Earles, J. M. 1973. *Forest Area Statistics for Midsouth Counties*. U.S.F.S. Resource Bulletin SO-40, Southern Forest Experiment Station, New Orleans, Louisiana.
7. Gamble, Hays B. 1968. *The Regional Economic Role of Forest Products Industries*. J of Forestry Vol. 66, No. 6, pp. 462-466.
8. Moak, James E. 1971. *Forestry: Its Economic Importance to Mississippi*. Bulletin 785. Mississippi State University Agricultural and Forestry Experiment Station, State College, Mississippi.
9. Soil Conservation Service. 1970. *Oklahoma Conservation Needs Inventory*. S.C.S., Stillwater, Oklahoma.
10. Sternitzke, Herbert S. and Charles C. Van Sickle. 1968. *East Oklahoma Forests*. U.S.F.S. Southern Forest Experiment Station, New Orleans, Louisiana.
11. U.S. Department of Commerce. Bureau of the Census. 1972. *Census of Manufactures*. Area Statistics. U.S. Government Printing Office, 1972.
12. U.S. Department of Commerce. Bureau of the Census. 1971. *Annual Survey of Manufactures, 1970-1971*. U.S. Government Printing Office, 1971.
13. U.S. Department of Labor. Bureau of Labor Statistics. 1974. *Handbook of Labor Statistics 1974*. U.S. Government Printing Office, 1974.

OKLAHOMA

Agricultural Experiment Station

System Covers the State



Main Station — Stillwater, Perkins and Lake Carl Blackwell

1. **Panhandle Research Station — Goodwell**
2. **Southern Great Plains Field Station — Woodward**
3. **Sandyland Research Station — Mangum**
4. **Irrigation Research Station — Altus**
5. **Southwest Agronomy Research Station — Tipton**
6. **Caddo Research Station — Ft. Cobb**
7. **North Central Research Station — Lahoma**
8. **Southwestern Livestock and Forage Research Station — El Reno**
9. **South Central Research Station — Chickasha**
10. **Agronomy Research Station — Stratford**
11. **Pecan Research Station — Sparks**
12. **Veterinary Research Station — Pawhuska**
13. **Vegetable Research Station — Bixby**
14. **Eastern Pasture Research Station — Muskogee**
15. **Kiamichi Field Station — Idabel**
16. **Sarkeys Research and Demonstration Project—Lamar**