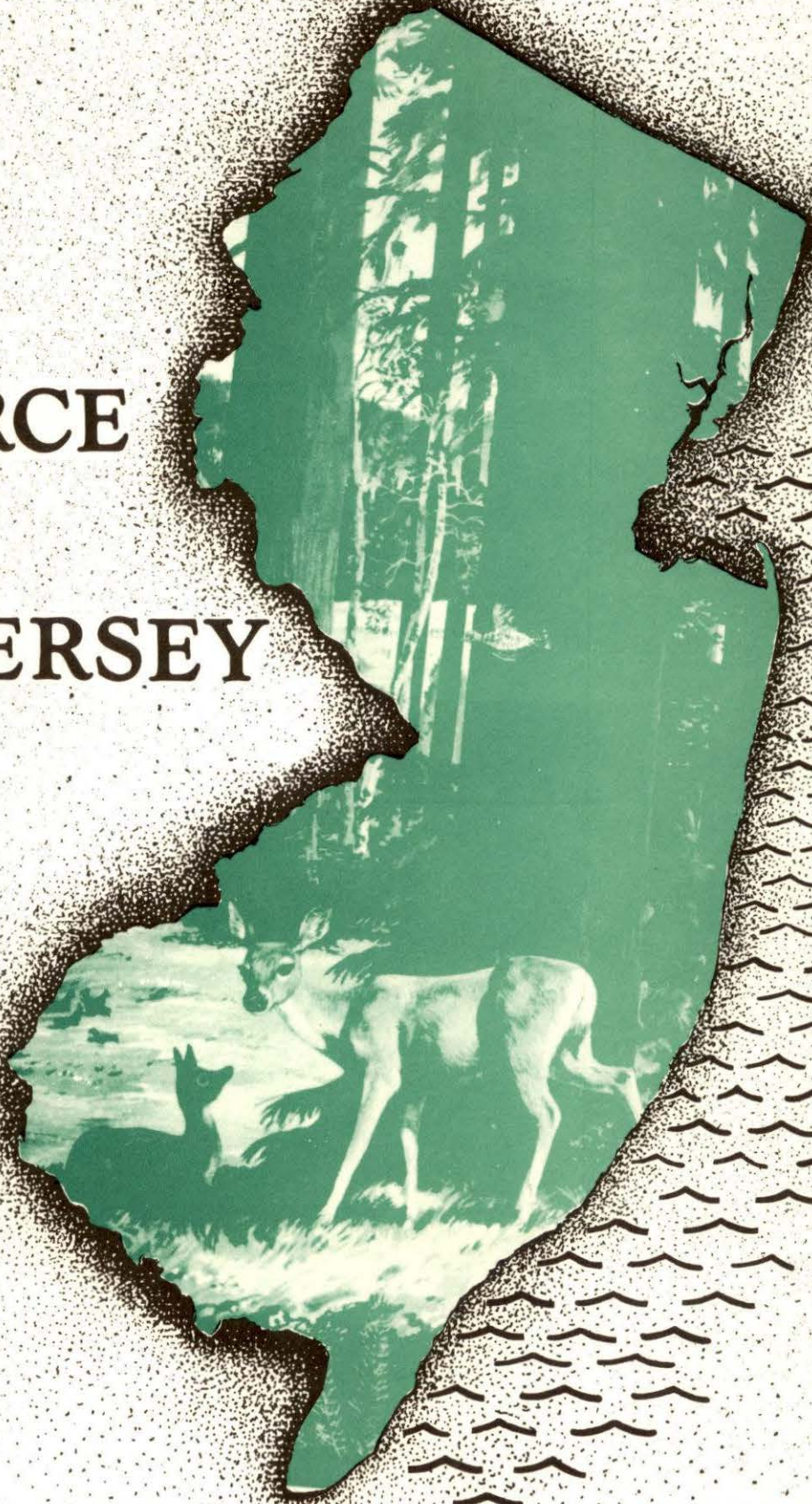


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1965

# The FOREST RESOURCE In NEW JERSEY

**Resource  
Monograph**



STATE OF NEW JERSEY DEPARTMENT OF CONSERVATION AND ECONOMIC DEVELOPMENT

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TRENTON 25

August, 1965

It is with great pleasure that we present this study entitled "The Forest Resource in New Jersey", which is one of a series of monographs on the natural resources of the State. This series is a part of the inventory stage of the Statewide Planning Program.

Although New Jersey is the most urbanized state in the nation, it possesses an abundance of natural resources. It is the States' policy to develop and enhance these resources in order that the greatest benefit may be derived from them. Therefore, the inventory and recommendations for future use of these resources forms a vital part of the Statewide Planning Program.

This monograph examines the forests of New Jersey from both an economic and a land use point of view. Challenges to the future status of this resource and means of assuring the existence and well being of the forests and woodland of New Jersey are examined.

This report is offered in the hope of stimulating further discussion. Your comments on this material are most welcome.

A handwritten signature in cursive script, reading "Robert A. Roe".

Robert A. Roe  
Commissioner



STATE OF NEW JERSEY  
RICHARD J. HUGHES  
Governor

THE FOREST RESOURCE  
IN NEW JERSEY

DEPARTMENT OF CONSERVATION  
AND ECONOMIC DEVELOPMENT  
ROBERT A. ROE  
Commissioner

DIVISION OF STATE AND  
REGIONAL PLANNING  
B. Budd Chavooshian  
Director

BUREAU OF STATEWIDE PLANNING  
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August, 1965

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This study is a part of the Statewide Planning Program. It has been prepared for the Governor's Interdepartmental Committee for State Planning. This Committee, representing the Governor and chief administrative officers of each of the fourteen Departments of State Government, convenes regularly to study and analyze problems related to the physical development of the State. The objective of the Committee is to develop a farsighted unified approach toward these problems on the part of all State agencies.

The preparation of this report was financed in part through an urban planning grant from the Housing and Home Finance Agency, under the provisions of Section 701 of the Housing Act of 1954, as amended.

The remainder has been financed by an appropriation of the State of New Jersey as part of the Cooperative Governmental Planning Program.

About this report. ....

This monograph is one of a series of studies concerned with the status of natural resources in New Jersey that contribute to both the economy and the land use pattern of the State. These studies have been undertaken as part of the inventory phase of the Statewide Planning Program which has as its ultimate objective, the preparation of a comprehensive State Development Plan.

The New Jersey Division of State and Regional Planning operates under a mandate to promote the orderly development of the State's physical assets by:

1. assembling and analyzing pertinent facts regarding existing development conditions and trends;
2. preparing and maintaining a comprehensive guide plan and long-term development program for the future improvement and development of the State;
3. undertaking the task of achieving fuller coordination of the development activities of the several State departments; and
4. stimulating, assisting, and coordinating local, county, and regional planning activities.

The main objectives of these monographs are to:

1. establish the role and current status of the various forms of land use in New Jersey.
2. identify past and current trends reflected by each of these land uses
3. discuss the significance of these trends
4. discuss a broad policy with regard to the future role of each land use in relation to the ultimate pattern of development within the State.



## Introduction

People have become so accustomed to the urbanization and industrialization which has come to characterize much of New Jersey, that they often overlook the fact that nearly one-half of the State is still forested (see figures 1 and 2). Because they lack the grandeur of the great stands of timber in many parts of the country New Jersey's forest lands sometime do not receive consideration relative to their importance.

Despite decades of neglect and waste during the 19th century, New Jersey's forests are today one of its most valuable natural resources. The uses of these forested lands and their products extend from construction materials and raw materials of manufacture to recreation and open space. Forested areas also play an important role in assuring the adequacy of the State's water supply. It is the objective of this monograph to assess the role of forests in New Jersey, noting especially their potential for the future from a resource standpoint and their role in preserving needed open space in this urban State.

## Extent of Forest Coverage in New Jersey

What constitutes a forest area? According to the U.S. Forest Service there are three characteristics of forest land:





1. Lands that are at least 10 percent stocked with trees of any size and are capable of producing timber or other wood products, or of exerting an influence on the climate or on the water regime;
2. Land from which the trees described in "1" have been removed to less than 10 percent stocking and that has not been developed for other use;
3. Land upon which trees have been planted to serve a specific purpose.<sup>1</sup>

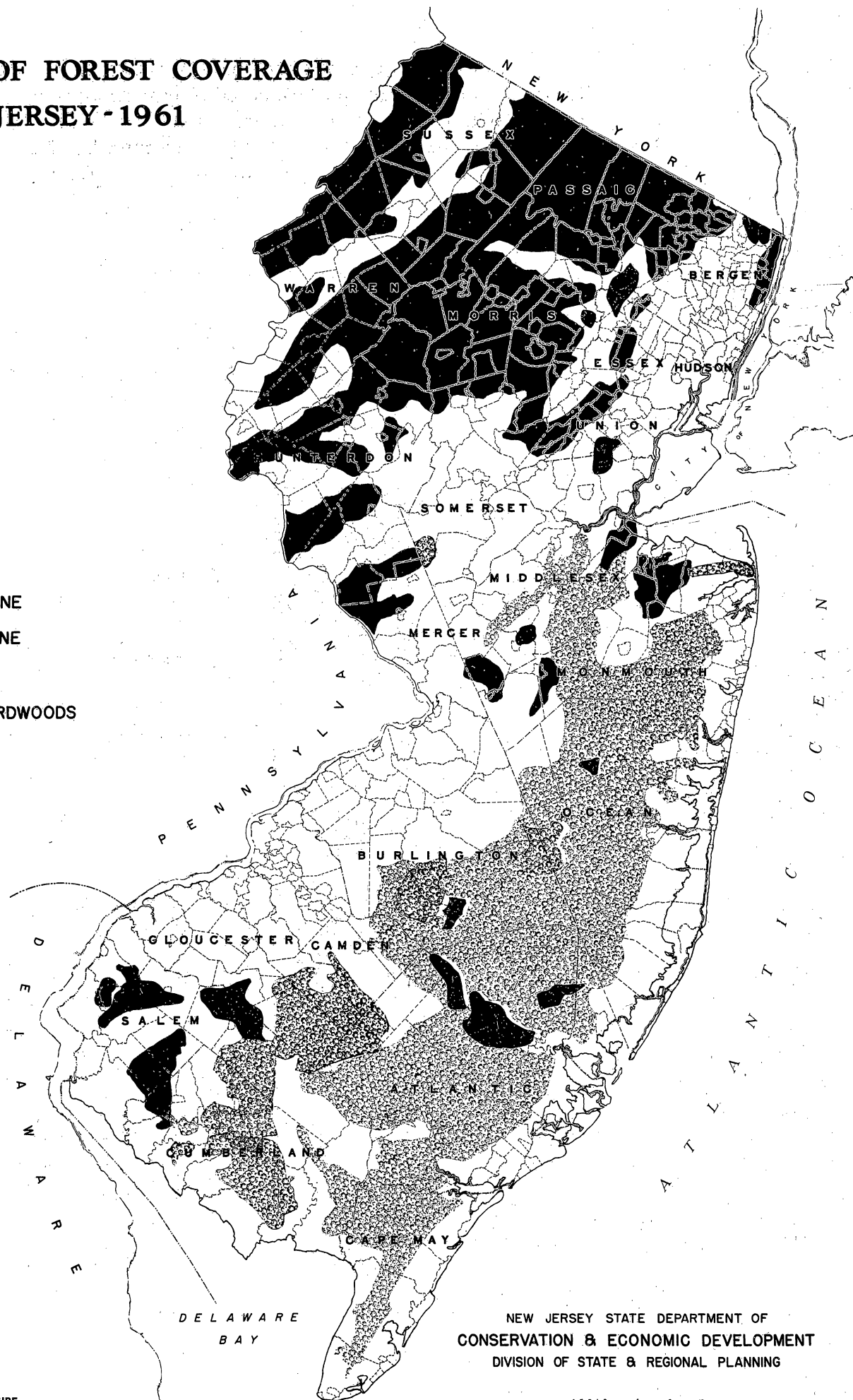
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1. U.S. Forest Service, Timber Resources of New Jersey, Upper Darby, Pennsylvania, 1958, p. 31.

FIGURE 1

# EXTENT OF FOREST COVERAGE IN NEW JERSEY - 1961

-  YELLOW PINE
-  OAK and PINE
-  OAK
-  SWAMP HARDWOODS

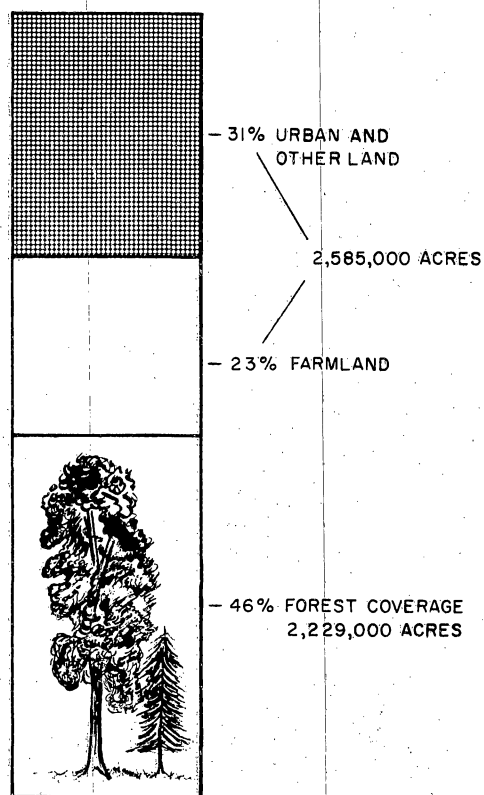


NEW JERSEY STATE DEPARTMENT OF  
CONSERVATION & ECONOMIC DEVELOPMENT  
DIVISION OF STATE & REGIONAL PLANNING

There are two distinct forest areas in the State; the deciduous woodlands of northern Jersey and the Pine Barrens of southern Jersey. With nearly one-half of the State's area covered by this resource, it is a significant land use in the Garden State.

FIGURE 2

# LAND USE IN NEW JERSEY



SOURCE: *TIMBER RESOURCES IN NEW JERSEY*, Northeastern Forest Experiment Station, U.S. Department of Agriculture.

## History of Forests in New Jersey

When New Jersey was settled over three hundred years ago, it was covered primarily by natural waterways, woodland, and forest. The Indians living here at the time had left the forests virtually untouched. The settlers, however, needed land for farms and towns. They needed wood for fuel, houses, tools, and boats. Thus they began to cut the trees and the vast forest resource began to disappear. The settlers did this "Not to plunder or destroy, but to build a civilization."<sup>2</sup>

Thus during the next several decades, the forests were exploited as the new civilization began to build and flourish. Lumber was the primary building material as new communities were developed. The predominant modes of transportation, boats, wagons, stagecoaches, and trains were all constructed with wood.

By the time of the Civil War, New Jersey's forest resources had been badly depleted. Its peak as a lumber producer had passed. During those years, the forests were mismanaged and there was virtually no conservation effort. In 1899, the annual report from the State Geologist contained a study of the State's forest resources. Prepared by some of the nation's leading foresters including John Gifford and Gifford Pinchot it said in part, "New Jersey is ruined as a lumber state." The report did point out the possibility of reviving New Jersey's forests for a wide-range of uses through sound forest management.

In 1905 the State Legislature appointed a State Board of Forest Park Reservation Commissioners with power to acquire forest land. However, little money was appropriated to accomplish the job. In 1907 the Commission appointed a technical forester to administer forest reserves. At that time, a goal of acquiring for the State 200,000 acres of forest land was established. Because of the lack of funds not much acreage was accumulated in the early years. However, by purchase and gift, and the recent Green Acres program the State acquired about 300,000 acres of land

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2. Edwin Larson, Kendell Smith, Forests in the Garden State, Northeastern Forest Experiment Station, Upper Darby, Pennsylvania, 1958, p.3.

as of 1964 the vast majority of which is forest land.<sup>3</sup>

In 1924 the State Forest Fire Service was established. During previous years the forests' worst enemy, fire, had destroyed vast acreages of valuable forest land. However, the Forest Fire Service has cut fire damage significantly, although an occasional fire still gets out of control and in a short period of time destroys many years of work.

During the 1930's the Civilian Conservation Corps performed feats in the States' forests, "comparable, in the conservation sense, to the legendary deeds of Paul Bunyon in Western woodlands."<sup>4</sup> The CCC made State owned forests accessible, attractive for recreation, and assisted in minimizing the damage from fires.

In 1937 a vigorous forest and timber management program was initiated. This program, vastly expanded and improved, is currently under the jurisdiction of the Department of Conservation and Economic Development. Because of effective management programs, harvesting and planting advice to private land owners, improved forest fire protection, and expanded land acquisition under the Green Acres and Federal Open Space assistance programs, the status of New Jersey's forests has improved considerably since the early 1930's. (The Conservation and Resource Management programs are discussed later in this report.)

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3. Department of Conservation and Economic Development, Third Annual Report- Green Acres, January 28, 1965, Appendix B.

4. John T. Cunningham, "Woodlands of New Jersey," 1958, page 4.



## USES OF THE FOREST

### Lumber and Pulpwood

Trees are used for three basic purposes, fuel, lumber, and pulp and paper. As early as 1650, iron furnaces, glass and pottery factories, and most homes were using the State's forest resources for fuel. Firewood can be cut from small trees and the prolific use of the forests severely hampered their maturity. As new fuels have come into use, fuelwood production has dropped significantly and use of forests for fuel has virtually ceased.

The lumber industry and the paper and pulp industry are the major users of raw wood products from the State's forests. There are approximately 65 active saw mills in New Jersey and they obtain about 60 per cent of their raw materials from the forests of the State.<sup>5</sup> Most of the lumber is used for construction, boat building, manufacture of wooden containers, and pallets. There are 5 pulp mills in the State producing pulp for use in roofing, insulation material, and paper products.<sup>6</sup> These industries combined account for approximately \$500,000,000 worth of products and payroll annually.<sup>7</sup>

Much of New Jersey's lumber is used for specialty products although general construction remains a major consumer. A project such as the replica of the sailing ship "Bounty" for use in the motion picture "Mutiny on the Bounty" was constructed in part with New Jersey hardwoods. Because of the high quality of some New Jersey timber internal work on many boats of varying size is done with Jersey lumber products. The high quality of the lumber cut in this State has created a favorable market for New Jersey wood.

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5. U.S. Forest Service, The Timber Resources of New Jersey, Upper Darby, Pennsylvania, 1958, p. 3.

6. Ibid.

7. Edwin Carson, Wendell Smith, op. cit. p. 4.

The demands of the lumber industry and the paper and pulp industry are somewhat different. The lumber industry depends primarily upon hardwoods, while the paper and pulp industry depends on softwood. Hardwood accounts for about 80 percent of all the lumber produced in the State.<sup>8</sup> The most common hardwood species are oaks, yellow poplar, and sweetgum. Seventy-five per cent of the pulpwood cut in the State is derived from softwood species, principally pitchpine, shortleaf pine, and Virginia pine.

These two industries also measure timber differently. The lumber industry measures trees and logs in board feet which results in an estimate of the quantity of lumber that a tree will yield. The pulp industry measures wood in terms of cords.<sup>9</sup> This difference is a reflection of the relatively great importance of length and straightness in determining the usefulness of trees for lumber as compared with pulp production. A small or crooked tree may have little or no board foot volume since its value to the hardwood user is limited. Because these characteristics are not important to the paper and pulp industry, the same tree would have a considerable volume in cords.

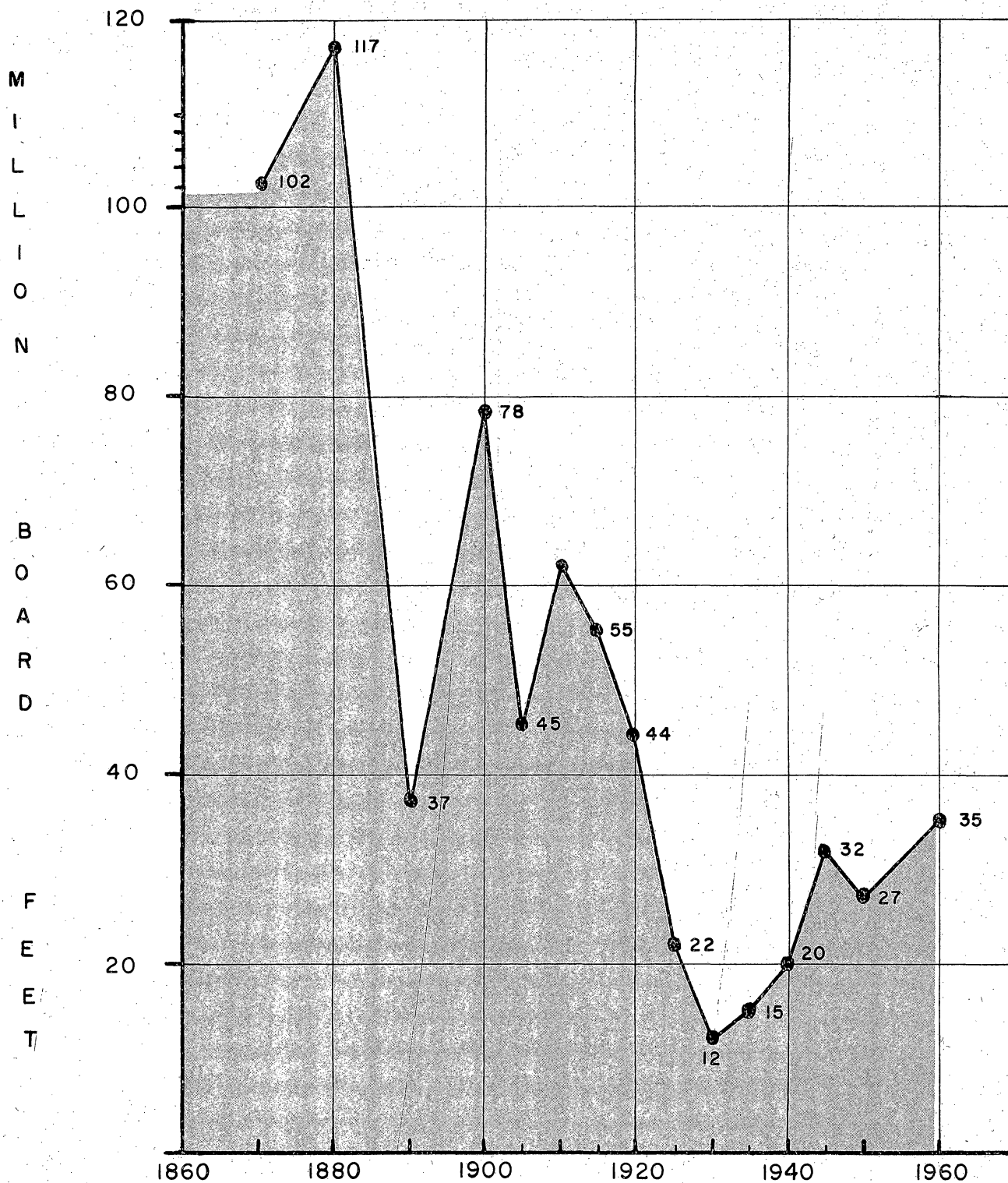
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8. U.S. Forest Service, op. cit., 6

9. A board foot is a piece of lumber 1 foot long, 1 foot wide, and 1 inch thick, or its equivalent. A cord is a stack of wood 8 feet by 4 feet by 4 feet or its equivalent.

FIGURE 3

# LUMBER PRODUCTION IN NEW JERSEY BY SELECTED YEARS



SOURCE: *TIMBER RESOURCES IN NEW JERSEY*, Northeastern Forest Experiment Station, U.S. Department of Agriculture.

## The Timber Inventory

New Jersey's forests provide a substantial share of the supply required by wood using industries in the State. It was estimated in 1958 that the State's forests contained nearly three billion board feet of timber, enough to build 300,000 frame houses.<sup>10</sup> Trees that are not suitable for saw timber (standing timber suitable for lumber) can be used for pulpwood as long as no decay has set in. In these terms approximately 14 million cords of wood are available.<sup>11</sup>

Unlike other natural resources such as coal, oil, and metallic ores, the forests can be replenished over time. Once an iron or zinc mine is depleted it will never again be a source of iron or zinc. Forests, on the other hand, can be replanted and if properly managed, can produce a cash crop in the next generation. Forest management programs have continually improved the quality and quantity of timber in New Jersey. A continuation and expansion of these programs, which are discussed in the next section, will guarantee the future of the forest resource in the State.

Timber volume has been steadily increasing in New Jersey since the late 1930's (see figure 3). In recent years the amount of new timber planted and grown has been about four times the amount cut.<sup>12</sup> Much of the lumber is not of the highest quality, but this is a result of past use of the forest, ie repeated cuttings and wildfires at short intervals. Improved management, forest fire protection, and sound harvesting techniques will improve the quality of saw timber.

### Other Uses of the Forests

To think of forests only in terms of timber products is literally not to see the "forest for the trees." Forests serve valuable functions in terms of water supply, recreation, wildlife conservation, and the less tangible aspects of climate control and aesthetics.

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10. U.S. Forest Service, op. cit. p. 5

11. Ibid. p. 8

12. Ibid., p. 9

Water supply is a problem in an urban state such as New Jersey. Much water is often lost due to excess runoff after rainfall or melting snow. The heavy growth in forests tends to prevent or slow runoff, which in turn replenishes the soil and underground aquifers. Forest streams carry less mud and silt, thus providing more and cleaner water for reservoirs. Tree coverage aids in the prevention of erosion along streams and thus protects the course of a stream. At the same time the control of runoff lessens the possibility of destructive floods. Forestation of watersheds is vital to insuring a sound water supply which in turn is the lifeblood of all forms of development.

The forest's role in recreation is varied and can satisfy a wide range of demand. The Department of Conservation and Economic Development has provided camp sites in several of its forest areas. Picnicking, hiking, hunting, fishing and relaxation are several other recreation uses that, with proper planning, can be accommodated in forested areas. Furthermore, where reservoirs are created within forests, swimming and boating and other water oriented activities also might be provided.

Wildlife and plant life conservation are appropriate functions of forests. There are numerous species of animals and wildlife that seek refuge in the forest areas. Unless the latter are preserved much of the wildlife will flee the State or become extinct. Similarly there are many forms of plant life, some unique to New Jersey, that flourish in the forest and wooded areas. These uses can be linked to both recreational and educational functions. Examples of the latter are Hutcheson Memorial Forest, of Rutgers - The State University which is used extensively in the University's education and research programs, as well as programs of secondary and elementary schools, and Herrontown Wood which is part of Mercer County's park system.

The recreation potential of both publicly and privately owned forests has just begun to be tapped. To realize this potential fully, an active program of planning must be initiated to develop these resources where appropriate, provide more areas available to the public, and to provide adequate access to these areas. Planning should also be instituted to integrate the forests into the land use pattern, especially in terms of recreation.



Although forests and climate may not seem related, thick woodlands tend to temper sharp "temperature changes and cut down heavy winds. This also aids in the prevention of wind erosion.

Finally, as aesthetic contributions to the urban pattern, forests are priceless. The natural beauty of the autumn show of colors or the green woodlands set off against the background of urban development are part of New Jersey's heritage. The open breaks that the woodlands provide in this most urbanized state are irreplaceable. No other low density or open space land use can provide the rich natural environment for some of our leisure hours as can the forests and woodlands.

There would seem to be ample justification for any necessary effort to successfully manage and continue this resource.

## Conservation and Resource Management

New Jersey's forest protection and management program is designed to enhance this valuable resource. It is aimed at preventing the overcutting of timber which occurred during the nation's early history. This early exploitation essentially prevented the forests from maturing as young trees were cut and never replaced. The constant need for new farm land was a major contributor to this problem. Before modern soil management techniques were instituted farmers farmed their land until it was useless and then cleared more acreage for crops. These early practices eliminated many fine timber stands and precluded replacement on the unproductive land.

Rapid urbanization of the State, especially in recent decades, has also eliminated many fine stands of timber. In addition to the affect on the timber supply, the wholesale elimination of trees causes erosion, drainage problems, and the diminution of aesthetics. Nevertheless, the total forest coverage has remained fairly constant due to the State's replanting program.

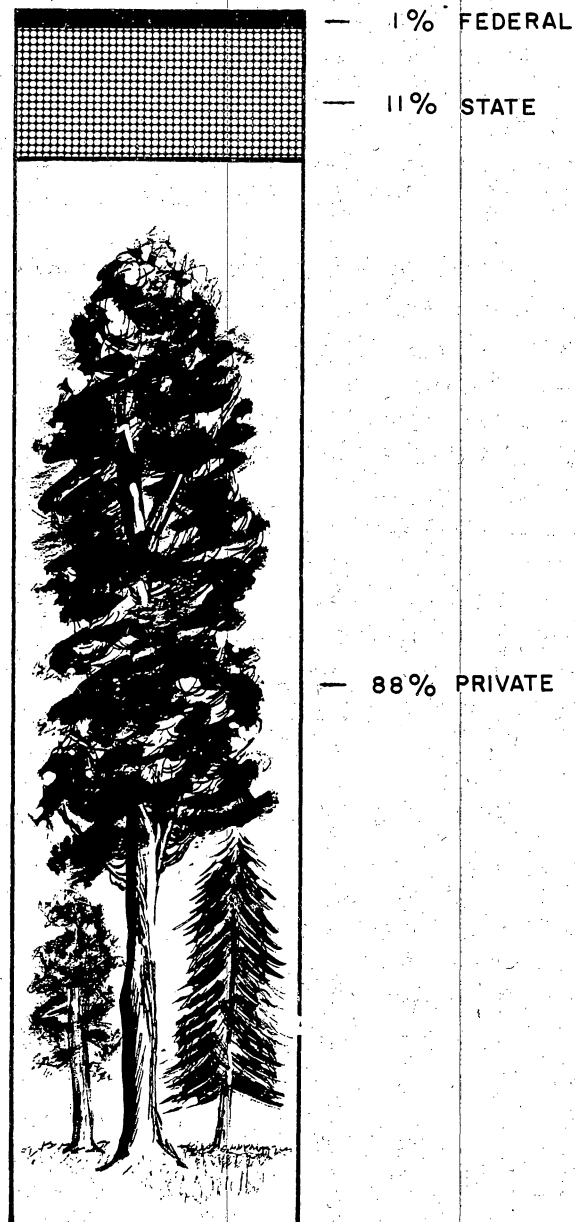
In some areas an opposite phenomenon has occurred. Forests, permitted to grow unchecked have become so congested so as to choke off growth. This has the affect of injuring the quality of timber and depleting the supply of good lumber.

One of the forest's worst enemies is fire. In moments flames can destroy decades and centuries of nature's work. Drought is a phenomenon that cannot be prevented and it is during these dry periods that most forest fires occur. Precaution, quick detection, and sound fire fighting techniques can diminish the danger of forest destruction by fire.

Finally, insects and disease can be most destructive to a forest. If forests are to remain a useful resource, effort must be expended for their care and protection.

FIGURE 4

## FOREST OWNERSHIP IN NEW JERSEY



SOURCE: *TIMBER RESOURCES IN NEW JERSEY*, Northeastern Forest Experiment Station, U.S. Department of Agriculture.

There is a great amount that can be and is being done toward this end. In addition to managing and protecting State owned forests, the State gives considerable attention to privately owned forest areas of ten acres or more.<sup>13</sup> The State Nursery at Washington's Crossing raises seedlings for reforestation. Land owners with 10 or more acres of forest land may purchase these trees at a nominal cost. Professional foresters of the Forest Management Section of the Department of Conservation and Economic Development can assist those interested in marketing their timber. The State forester goes over the individuals' woodland and sets up a forest management plan that suits that particular woodland and best meets the needs of the property owner. The forester marks the trees that are appropriate for harvesting and estimates the amount of lumber that they should yield. He then puts the owner in contact with a timber agent who accepts bids for the job from loggers and sees that the terms of the contract are carried out. Further advice is available to the land owners on thinning and harvesting methods, both of which are important to the health of forest areas. This program guarantees a satisfactory return to the owners and assures future harvests from the same woodland.

Aid and advice are given to private land owners, industries, and groups such as Boy Scouts, YMCA camps, and church organizations that wish to establish tree plantations to be harvested in the future. The amount of acreage that has been reforested under this program however is not extensive.

Periodic droughts, highly flammable timber and heavy travel through forested areas of the State, especially the Pine Region makes the State a high fire hazard area. Because of this New Jersey spends proportionately more for forest fire protection than any other Northeastern state except Rhode Island.<sup>14</sup> The reduction in the amount of forest area burned reflects the progress that is being made. Since most forest

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13. Nearly 90 percent of New Jersey's forest land is privately owned by 30,000 different persons. Timber Resources in New Jersey, p. 28. See figure 4.

14. Ibid, p. 13

fires are caused by man's carelessness public cooperation is necessary. Continual fires, as have occurred in the Pine Barrens of southern Jersey, rendered large portions of that forested area unproductive. Forest land owners, with aid and advice from State foresters, can assist the fire protection program by constructing fire breaks and keeping a careful watch on their land.

These programs are all part of a continuing effort to preserve and improve the State's forest resource and to make them more productive and useful. Much depends on the cooperation received from the forest owners. The general public, using the forests must also cooperate in this continuing effort.

Management is necessary from another point of view aside from the continuation of the resource. In the management of forest areas, effort is made to diversify the tree growth in terms of type and potential use. This is important in view of the possible future use of these forest areas. The demand for a particular type of lumber may cease, so that particular area can be adapted to, say, recreation. The demand for pulp may quickly increase and hardwood demand decrease. It should be possible to effectuate a changeover in high quality supply. Since the future is somewhat unpredictable such diversification through sound management is advantageous.

The State also carries on an educational program in forestry. Much of this work is done in cooperation with the Agricultural Extension Service. Furthermore the Agricultural Conservation Program in the United States Department of Agriculture pays part of the cost of certain forestry practices on private land. Finally, a woodland owner can also get professional help by engaging the services of a consulting forester.

#### Future Role of the State

The preceding pages have outlined numerous problems related to forests and what is being done to effectively cope with these problems. The role of the public has been made clear. They must cooperate in the care and the use of forests and the marketing of forest products. Where appropriate forest owners should take advantage of State services and always respect the forest as a precious resource.



In the final analysis the State program effective as it may be, can always be improved. The following suggestions are made:

1. Increase the effort to acquire additional acres of forest land to come under the protection of the State. Full use should be made of the funds available under the Federal Land and Water Conservation Act as well as other Federal and State aid programs.
2. Continually seek ways of improving the forest fire prevention and protection program. New Jersey's compact size and excellent fire detection program makes it ideal for testing new techniques.
3. Expand the nursery program where appropriate.
4. Increase the educational effort aimed at the thirty-thousand owners of forest land within the State in order to render the State program for the care of the State's forests more effective by increasing the number of participants.
5. Further educate the general public with regard to fire prevention and care of the forests; and improve the fire-fighting techniques where necessary.
6. Seek ways to encourage county and municipal support and participation in forest oriented programs.
7. Accelerate the forest management program, especially on State-owned property.

#### Concluding Statement

New Jersey's forests are a valuable, versatile and vulnerable resource. The Products of the forest are constantly around us. They can provide a much sought refuge for one day trips or prolonged vacation trips. They provide a refuge for animals, birds and plants of all species. Our forests aid in the provision of water supply and flood control.

Not the least of its functions is the role the forest plays in the pattern of the State's development. All of these functions are important to the citizens of New Jersey. Constant efforts must be made to preserve and improve this resource. Similar effort should be made to diversify the forests through sound management. The existence of the forest guarantees us a healthier and more pleasant environment - it is our responsibility to guarantee the forest's existence.

## BIBLIOGRAPHY

Cunningham, John T., Woodlands of New Jersey, reprint from the Newark News, March 2, 9, 16 23, 1958.

Larson, Edwin H. and Smith, Wendell E., Forests in the Garden State, Northeastern Forest Experimentation Station, Forest Service, U.S. Department of Agriculture, Upper Darby, Pennsylvania, No date, pp. 16.

Landberg, Hans H., Fishman, Leonard L., Fisher, Joseph L., Resources in America's Future, Resources for the Future, Inc. John Hopkins Press, Baltimore, Maryland, 1963, pp. 252, 257, 355, 370.

Webster Henry H., and Stoltenberg, Carl H. The Timber Resources of New Jersey, Northeastern Forest Experimentation Station, Forest Service, U.S. Department of Agriculture, Upper Darby, Pennsylvania, 1958, p. 41.

### Others

New Jersey Almanac, New Jersey Almanac, Inc., Upper Montclair, New Jersey, 1963, pp. 118-119.

Files of the Division of State and Regional Planning, Trenton, New Jersey

William L. Hutcheson Memorial Forest at Rutgers. The State University, pamphlet, United Brotherhood of Carpenters and Joiners of America.

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\*\*Mr. Steiss is currently on a leave of absence.