

## EASTERN WHITE PINE

### Nature's Gift to New England

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If you travel any distance in New England, you will see white pine trees frequently whether you realize it or not. Eastern white pine, called Pinus strobus by the botanists, is one of New England's more distinctive landmarks. Although this tree also grows in New York State, Pennsylvania, the Lake States, and to some extent in other parts of the Northeast, in no other part of the country is it so abundant over as wide an area or so persistently trying to hold its own as in New England.

Even more significant than the landscape value of New England white pine is its economic importance as a first-class commercial timber tree. Forty per cent of all the white pine lumber produced in the United States in 1947--Idaho pine and California sugar pine included--came from New England.

Eastern white pine is the tree that made Maine famous as a lumber state during the first half of the 19th century. After 1850, the tree brought the same type of fame to New York, Pennsylvania, Michigan, and Wisconsin. Throughout the century the demand for white pine as general-utility lumber surpassed that for any other species. Chicago, Detroit, Cleveland, and other mid-western cities were practically built of white pine made up more than half the country's softwood lumber cut for 25 years following the Civil War, and probably also throughout the first 65 years of the 19th century.

A substantial part of New England's economy is based upon its forests. The forest industries--pulp and paper, furniture, veneer and plywood, wood turnings, wooden containers, general millwork, and other wood manufacture--provide nearly ten per cent of New England's manufacturing jobs. Forest products, raw and finished, comprise more than 30 per cent of the revenue freight tonnage in carload lots originating on New England railroads.

White pine plays only a minor part in the pulp and paper and furniture industries. It is of major importance, however, in the general lumber and wooden box industries. It is also used for making toys, various types of pails and tubs, and many other wood products.

High quality eastern white pine was formerly the preferred wood for pattern making. It is still eagerly sought for that purpose, but only a small part is of pattern grade today or has the quality required for millwork, sash and doors, or interior trim. This reflects New England's indifferent forestry practices in the past, not the inherent characteristics of the tree.

During the four-year period 1906 through 1909, New England's sawmills turned out more than 3.8 billion board feet of white pine lumber, almost a billion a year. That was 37 per cent of New England's total lumber production during the period. White pine's importance as a lumber tree is relatively greater today than it was then. From 1943 to 1947, white pine made up nearly 65 per cent of New England's total lumber production of slightly less than 5.3 billion board feet. It is, by far, New England's most important lumber tree. It is practically without competition for many productive uses and strongly competitive in others. It was a good tree in the old days, and it is a good tree now. With the right kind of encouragement it can assume a still greater degree of importance.

Eastern white pine gave Maine its nickname--the pine-tree state. It is still New England's most important lumber tree, and New England is the country's largest single source of white pine lumber. Cutting and marketing various forms of white pine wood adds nearly \$80 million to New England's annual income.

Cutting is in excess of growth, however, and the reserve supply in the forests is shrinking. With better forestry methods New Englanders can increase the annual growth of this valuable tree many times over. The purpose of this article is to direct attention to the reasons why a "more white pine for New England" program is needed.

In eight recent years New England has produced nearly five billion board feet of white pine lumber, an average of 622 million feet a year (see Table I). The lumber production figures indicate only the largest single element of commercial drain on the stand of white pine in the forests. There is also some utilization of white pine for pulp and other purposes.

The New England Wholesale Lumber Association estimates that 50 to 60 per cent of New England's white pine lumber-output is used for local construction purposes, including repairs, chiefly in the three northern states. It has been estimated that wooden-box manufacture within the region absorbs between 15 and 20 per cent. Local use of construction and box making may thus account for around three-quarters of the supply. Some of the remaining 20 to 35 per cent is shipped to other regions as box and crate stock, as lumber for other industrial purposes, and to some extent as building material. The balance provides raw material for wood-using industries other than box making in New England.

#### The Value of White Pine to New England's Economy

Data are lacking for a precise measurement of the value of white pine to New England's economy. It is possible, though, to piece together bits of information and arrive at an estimate that white pine provides income at the rate of more than \$70 million annually.

The part that local box manufacture contributes is perhaps the easiest to figure with fairly close accuracy. Its contribution amounts to about \$11 million per year.

It has been estimated that the average quantity of white pine currently going into box manufacture in the region amounts to 117 million board feet per year. Box lumber is usually unplanned, and most of it comes to the box plant with the bark still adhering to the edges of the boards. Round-edge, dry white pine box-lumber was quoted at \$35.00 to \$40.00 per thousand feet, f.o.b. sawmill, just prior to the outbreak in Korea. The average transportation cost from sawmill to box plant has been estimated at \$7.50 per thousand. If the average f.o.b. sawmill price is taken to be \$37.50, the average cost at the box plant is \$45.00 per thousand board feet.

Manufacture of white pine into boxes and shoo (parts of boxes), allowing for waste, doubles the value and brings the figure up to \$90.00 per thousand feet. Transportation of finished boxes and shoo from the box plant to its customers adds approximately \$5.00 more and brings the total to \$95.00 per thousand board feet. One hundred and seventeen million feet at \$95.00 per thousand is \$11 million.

Use of white pine lumber for construction and building repair adds at least \$27 million to New England's income. Number four common white pine, planed and seasoned, was quoted at \$74.00 to \$83.00 per thousand feet at the sawmill in early July 1950. Allowing for a percentage of higher grades and for the ups and downs of the market, an average price of \$75.00 per thousand

is a conservative estimate of the price which New England sawmills have been receiving for white pine lumber suitable for construction and general-utility purposes. On this basis, the nearly 350 million feet per year currently being used for construction in New England is bringing the sawmills an annual income of at least \$25 million. Transportation from mill to building site adds another \$2.5 million.

The remaining 150 million board feet per year are shipped to points outside New England or are consumed in other local industries. These uses probably have unit values at least equal to that for the domestic manufacture of boxes. One hundred and fifty million feet at \$95.00 per thousand is more than \$14 million.

The total value for all uses of New England white pine lumber described above is about \$52 million a year. A small part of the lumber also goes through wholesale and retail distributors. An additional allowance should be made to cover their costs of storage, handling, and transportation to customers.

What would New Englanders have to pay for lumber from outside if the native supply of white pine were not available? Southern pine "roofers" may be used for purposes of general comparison, even though they could not be satisfactorily substituted for native white pine in many of its applications. During recent years the price of southern pine roofers delivered to Boston wholesalers in standard widths has fluctuated around \$90.00 per thousand. Allowing for wholesale and retail marketing costs and higher prices in northern New England, it appears that the average cost to New England consumers has been at least \$115 per thousand in recent years. If New Englanders bought southern pine roofers at the rate of 622 million feet a year, instead of using native white pine, they would have to pay more than \$70 million annually. Other types of lumber from other regions show similar excesses.

Not all white pine cut in New England goes into Lumber. Some is used for wood-pulp manufacture. Some skips the lumber stage with direct utilization from the log. Cooperage is an example. The indications are that we should add \$20-25 million to the \$50-55 million shown above to allow for these uses, for the savings resulting from the use of local material, and for the superiority of native white pine in many of its uses. Therefore, the total economic value of eastern white pine to New England probably ranges from \$70 million to \$80 million a year.

TABLE I  
PRODUCTION OF WHITE PINE LUMBER IN NEW ENGLAND  
1940-1947

Year	Board Feet Produced (000's)	Year	Board Feet Produced (000's)
1940	339,599	1944	744,040
1941	579,287	1945	612,961
1942	657,307	1946	726,269
1943	626,346	1947	687,175
		Total	4,972,984

Source: U. S. Bureau of the Census.

1 Some pine lumber may have come from logs brought in from other regions, including Canada. On the other hand, some New England timber may have been manufactured into lumber outside the region.

## The Reserve Supply

How much white pine do we have? What are the prospects that New England can continue to draw major economic benefits from this tree? Can these benefits be increased to keep step with the necessary expansion of New England to avoid economic stagnation? These are timely questions to which at least partial answers are available on the basis of existing information.

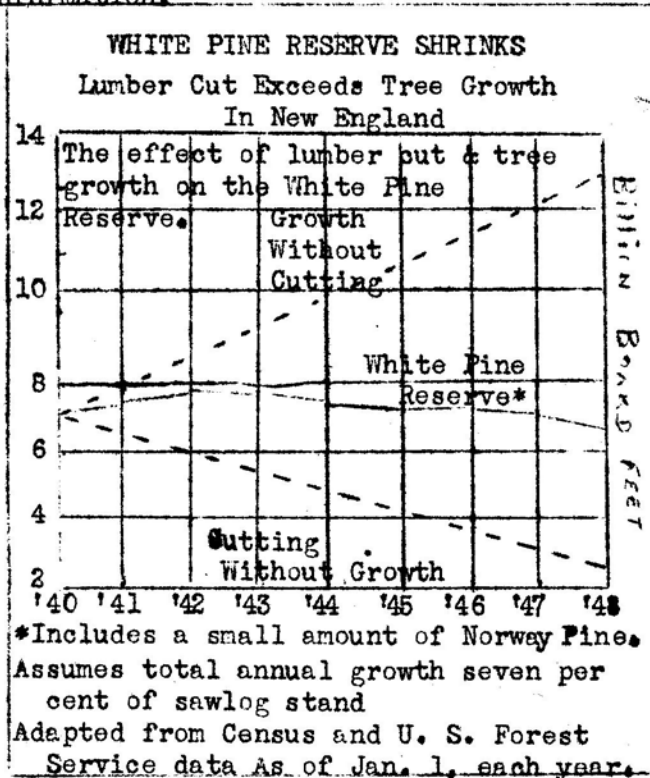
The accompanying chart shows that the total stand of white pine in New England was 7.3 billion board feet in 1945. More than half was in Maine and nearly 28 per cent in New Hampshire. Massachusetts had 13 per cent, Vermont, 11, and there was two per cent in Rhode Island and Connecticut.

It is startling to realize that lumber manufacture alone, from 1940 through 1947, took a quantity equal to about two thirds of the white pine reserve available in 1945. Fortunately, a part of the lumber cut came from timber that grew during the period. White pine trees do not mature in eight years, but every tree in the woods increases in size every year. Although there have been no accurate measurements of the total annual white pine growth in New England, it is possible to arrive at a usable estimate.

Figures supplied by the New Hampshire Forestry and Recreation Commission, based on unpublished data collected by the United States Forest Service, indicate that the total annual increment of white pine in New England may amount to between 500 and 525 million board feet at the present time. Against this growth is the average annual lumber cut of 622 million, together with an estimated ten million or more board feet consumed by the cooperage industry, an unknown quantity used for pulp and other purposes, and the annual loss from fire and the activities of insects and tree diseases. An allowance of 100 million board feet above the amount required for lumber and box production appears conservative. The total annual drain of white pine from the forests, therefore, is more than 720 million feet. The deficit, which comes out of the reserve stand (our capital), averages about 200 million.

On the basis of these estimates, the reserve stand is sufficient to last about 35 years, but this concept lacks realism. It assumes that enough trees will come to cutting size each year to provide the needed quantity of timber. That will be true only if there is an even distribution of trees through all the various stages of growth. The evidence is against this assumption. Much of the timber cutting in recent years has been of the clear-cutting type. It is probable that too large a proportion of the replacement growth is in small trees that will not reach marketable size within the next 40 years. It appears that we are working ourselves toward a gap in the schedule during which we shall have to wait for some more trees to grow large enough to cut. The shortage of available white pine timber has become increasingly apparent to lumber manufacturers in recent years. If we want to continue to have white pine, we must do something positive about it.

"More White Pine for New England" would be an appropriate slogan for an organized attack on the problem of the region's shrinking pine reserves.



American Forest Products Industries is already organized for "more trees." It may or may not be desirable to organize for so specific a purpose as increasing New England's pine stock. The purpose here is merely to emphasize the importance of white pine as an individual species. All groups--industrial, agricultural, financial, commercial, and professional--could appropriately join with the wood-products manufacturers, the forest owners, and the private and public foresters for a concerted effort to increase the annual output of white pine from New England's forests. How could such a purpose be achieved?

There is undoubtedly a place for research in the silviculture and management of white pine in New England, but the emphasis should be on application of findings of past research combined with plain common sense.

There are several steps in New England's forestry program. The major ones are (1) better protection against damage by fire, insects, and tree diseases, (2) reduction of the quantity of wood material wasted in logging and manufacturing operations, (3) improved cutting practices, and (4) intensified and more widespread application of forest management to young, growing stands.

Fire protection is of special importance to white pine, because it is more readily susceptible to fire damage than most other species. White pine has its own private tree disease, the white pine blister rust, which has been a continuing severe threat since it was brought from overseas 40 years or more ago. Working under the bark, the disease causes cankers that result in death. It is one of the alternate-host fungi. The other host is any species of the currant and gooseberry group. Control consists of eliminating the alternate hosts from the forests and from farms and gardens near white pine forests. Uncontrolled, the disease would probably eventually make white pine extinct. There must be no relaxation of the blister rust control program, locally or nationally.

White pine also has its own private insect--the white-pine weevil. The larvae of this pest attack and kill the tip of the main stem. After the so-called "leader" is killed, the top branches turn upward and take on the job of making the tree taller. At best this results in a crook in the trunk. Forking into two or more trunks often takes place. The weevil has never killed a white pine, but it hinders the efforts of the trees to produce straight logs and good-quality timber. No practical method of controlling the weevil has been found, but one is needed.

White pine is like any other tree or agricultural crop. It competes with other growth and tries to surpass it. Too often the "weed" competition is too great. We need management of the forest while it is in the formative stage to bring our white pine crop to maturity. Otherwise, less valuable species will occupy land well adapted to growing white pine. Thinning, weeding, and improvement-cutting operations bring beneficial results in young forests, just as similar operations do in turnip or carrot patches.

Most of all, we need general revision in our methods of harvesting the white pine crop. Too much of our cutting is still being done without regard to future production. Destructive clear-cutting and high-grading (taking out all the best trees with no thought to the damage done to the forest) should be replaced by selective, group, or other types of cutting specially designed to increase future productivity. Timber operators should continually keep in mind the desirability of giving the young white pine a chance.

Perhaps most importantly, some provision should be made to avoid the cutting of immature, rapidly growing white pine. A quick dollar can often be made from cutting and sawing pines that have not yet reached standard sawlog size, and this type of operation has been common for a number of years. It was particularly prevalent during World War II.

Under unaided natural conditions, it will take 15 years for a stand of white pine on a good site to increase in average diameter from nine to 11 inches. During that period the lumber content of the stand will nearly double. Under good

management, the increase in diameter and near doubling of the volume can be accomplished in nine years.

The accompanying chart shows that when stumpage values are considered, the results of good management are still more striking. A thousand feet of timber in larger trees, other things being equal, is worth more than the same quantity in smaller trees. Furthermore, progressive forest management, brings improvement in quality. Without management, a good 40-year stand of white pine will double in value in ten years. With good forest management, the value will triple. At age 60, the gross value of managed stands is twice that of unmanaged stands. These conclusions assume that management is begun before the trees are 30 years old. New England has a large acreage bearing white pine trees less than 30 years old.

The importance of white pine being what it is, waiting for natural growth would be good for the regional economy.

It would be good business for the owner, too, but applying progressive forest management would be still better. The point is that cutting undersize white pine timber is like killing the goose that laid the golden eggs. The best forestry is the kind that gets results in 10 or 15 years, not the kind that takes 50 or 60 years. The rewards for improved cutting methods are obvious and not long deferred.

The economics of forest improvement operations is less clear-cut. When we ask an owner to thin or weed his young stands, we usually ask him to make a cash outlay in return for which he gets only the prospect of a profit at some time in the more or less indefinite future. Some way of avoiding the cash outlay is needed. This can be accomplished if methods are developed for utilizing the young trees that compete with the pine. We need more pulp mills, wallboard plants, charcoal kilns, and other means of conferring value on the wood taken out in thinning and improvement-cutting operations. White pine will respond to the better conditions that result from such operations and repay us in more and larger trees available for cutting in later years.

A change in our method of taxing forest properties is another requirement for the best forest management. White pine suffers under the common methods of property-tax assessment on forest ownerships, like any other timber tree. The forest tax reform adopted by New Hampshire in 1949 may result in an increased yield of white pine timber in that state as its influence becomes more effective.

On the whole, Nature was not over-bountiful in her bequests to New England. It can never be said of New England that her natural resources account mainly for her economic success. It still makes sense, nevertheless, to make the most of the natural advantages that New England does have. Eastern white pine is one of those advantages. The University of Massachusetts says that white pine will grow more wood per acre than any other tree east of the Pacific Coast region. White pine is working for us, but the blister rust, the white-pine weevil, fire, and, most of all, human agents of destruction are working against us. Let's give this versatile and naturally prolific tree a lift.

