

1957

Maine Forest Facts (1957 Edition)

Maine Committee of American Forest Products Industries

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Maine Forest Facts

MAINE
FOREST
FACTS
1957

1957 edition



Maine Forest Facts

MAINE FORESTS AT A GLANCE

Total area of the state (acres)	19,866,000
Original forest area (acres)	18,500,000
Present forest area (acres)	17,088,000
Commercial forest area (acres)	16,601,000
Noncommercial forest area (acres)	487,000
Per cent of state forested	86

The first spot in the United States touched by the morning sun is timbered Mt. Katahdin, in north-central Maine.

From it stretches a carpet of deep forest greenery reaching into every county in the state. No other state has so great a proportion of its surface covered by forests.

Maine's development started with the first harvest of its timber resource when the Popham

colonists built a ship there in 1607. The economy of the state has been largely built on its forests ever since. The most heavily forested state in the nation, Maine still is important in the forest economy of the United States after 300 years of timber cropping. It is the country's leading producer of white pine lumber and among the leaders in output of pulpwood.

The forest-dependent industries in Maine—those that use wood as their basic raw material—lead all major industries in the state in number of full-time employees, in salaries and wages paid and in value added through manufacture. About 36,000 State of Mainers are directly employed in wood-using industries. Thousands more earn part of their livelihood working part-time in woods and mills. Their annual salaries and wages of more

than \$116 million comprise over one third of all industrial workers' earnings.

In these pages is presented a brief picture of Maine's forests and forest industries, as reflected in the latest statistics from industry and government sources.

THE FOREST AREAS OF MAINE

Maine's original forests are estimated to have covered about 18.5 million acres. Clearing for agriculture, for cities, villages, roads and other improvements has reduced the original forest area to a little more than 17 million acres—about 19 acres for each person living in the state.

With 86 per cent of its area covered with forests, Maine is the most heavily forested state in the nation; no other has so great a proportion of its surface in forest.

Not all of Maine's forests are available for production of commercial timber crops, however. Some are withdrawn to serve other useful purposes, such as parks and wildlife refuges. Still other areas are too remote or inaccessible at the present to be operated commercially. Even so, Maine has 16.6 million acres of commercial forest land—land that is capable of producing timber crops of commercial quality and is available for that purpose.

THE FOREST TREES OF MAINE

There are 76 tree species native to Maine, about 50 of them of commercial timber value. Others provide additional products, such as greens for decorations, nuts, berries and extractives.

Each species grows in association with some others in fairly definite patterns. These tree associations are known as forest types. Maine's forests are composed of three broad forest types—the white pine-hardwood type, the spruce-fir type and the northern hardwoods type.

The white pine-hardwood forest type is composed principally of white pine in mixture with beech, birches, maples, and some other hardwoods. Spruce and hemlock are frequently associated also. This type developed from the original forests of almost pure white pine. Cutting permitted other species, principally hardwoods, to become estab-

lished in company with it. The white pine-hardwood type is becoming more valuable as the demand for pulpwood—especially hardwood pulpwood—increases.

The spruce-fir type covers the largest area, extending over most of the northern and eastern portions. In the past, long spruce logs were taken from the spruce-fir forests; more recently these forests have produced 70 per cent of the annual pulpwood cut. The principal species are spruce and balsam fir. The chief associated species are hemlock, pine, cedar, beech, birch and maple.

The northern hardwood type, which extends from the northern border into the central sections, yields veneer logs, lumber, and pulpwood. Some of these areas are so remote that they have only recently been cut. Principal species are beech, birches, maples and poplar. Yellow birch is probably the most important commercial tree of the northern hardwood type.

FOREST TYPES OF MAINE

	<i>Commercial Forest Area (acres)</i>	<i>Per Cent of Total Commercial Forest</i>
White pine-hardwoods —	4,150,000	25
Spruce-fir —	9,297,000	56
Northern hardwoods —	3,154,000	19
Total all types —	16,601,000	100

MAINE'S TIMBER VOLUME

The wood in Maine forests in all live trees 5 inches and over, diameter breast high, is sufficient to supply the United States pulp and paper industry with all of its pulpwood for 5 years. About half of this total volume is softwoods—a much higher proportion than is found in other New England states.

In all trees 5 inches and over, diameter 4½ feet above ground—the forest growing stock—there are 5.8 billion cubic feet. A cubic foot—the unit of measurement of the growing stock—is represented by a block of wood 1 foot on each side. The volume of Maine's growing stock is equivalent to 157 million standard cords of wood. Slightly more than half the total volume is hardwood.

Three fifths of Maine's live sawtimber is softwood.

VOLUME OF GROWING STOCK IN MAINE COMMERCIAL FORESTS

	Million Cubic Feet	Equivalent in Million Cords	Per Cent of Total
SOFTWOODS —			
Sawtimber (9 inches and up) _____	3,989	50.0	31.8
Smaller merchantable timber (5 to 9 inches) _____	1,861	23.0	14.7
Total softwoods _____	5,850	73.0	46.5
HARDWOODS —			
Sawtimber (11 inches and up) _____	2,408	30.0	19.1
Smaller merchantable timber (5 to 11 inches) _____	4,343	54.0	34.4
Total hardwoods _____	6,751	84.0	53.3
TOTAL SOFTWOODS AND HARDWOODS _____	12,601	157.0	100.0

Maine has 55 per cent of the total sawtimber volume of New England and over one and a half per cent of the nation's total. By sawtimber is meant all softwood trees 9 inches and over, diameter at a point 4½ feet above the ground, and hardwood trees 11 inches and over. Sawtimber is measured by the board foot—represented by a piece of wood 1 foot long, 1 foot wide and 1 inch thick.

VOLUME OF SAWTIMBER IN MAINE COMMERCIAL FORESTS

Species	Board Feet	Per Cent of Total
Softwood		
Spruce and balsam fir _____	11,562,000,000	41.0
White and red pine _____	3,082,000,000	10.9
Hemlock _____	1,149,000,000	4.1
Other softwoods _____	1,105,000,000	3.9
Total softwoods _____	16,898,000,000	59.9
Hardwoods		
Yellow birch and sugar maple _____	6,226,000,000	22.0
Soft maple and beech _____	335,000,000	1.2
Cottonwood and aspen _____	252,000,000	0.9
Red oak _____	173,000,000	0.6
Ash, basswood and black walnut _____	52,000,000	0.2
Other hardwoods _____	4,290,000,000	15.2
Total hardwoods _____	11,328,000,000	40.1
Total sawtimber _____	28,226,000,000	100.0

OWNERSHIP OF MAINE FORESTS

One in every 11 persons in Maine owns some of the forest land. The greatest proportion of the more than 77,000 owners of the commercial forests have small holdings that average 68 acres each. Among

the 28 ownerships over 50,000 acres each is the largest private forest property in the country within the borders of one state—an area 2,250,000 acres, owned by the Great Northern Paper Co. Farm woodlots, on 23,368 farms, total 2,232,000 acres.

In its pattern of private forest land ownership, Maine differs from the other New England states. More than half of Maine's commercial forest area is in holdings over 5,000 acres each. Less than one seventh of the commercial forest is in farm woodlots. This pattern is reversed in the other New England states, where the major portion of the privately owned forest is in farm woodlots.

The ownership of the sawtimber is in about the same proportion as the land ownership—less than 14 per cent of the sawtimber is on farms and more than 85 per cent is on industrial and other non-farm properties.

In contrast with some states—notably in the

OWNERSHIP OF MAINE COMMERCIAL FOREST LAND

Owners	Acres	Per Cent of Total
Private		
Farm woodlands _____	2,232,000	13.4
Wood-using industries _____	6,617,000	39.9
Other private _____	7,570,000	45.6
Total private _____	16,419,000	98.9
Government		
Federal _____	90,000	*
State _____	41,000	*
County and municipal _____	51,000	*
Total government _____	182,000	1.1
Total all ownerships _____	16,601,000	100.0

*Less than 1/10 of 1 per cent.

SIZE OF PRIVATE OWNERSHIPS IN MAINE

Size Class	Acres	Per Cent of Total Acreage	Number Owners	Per Cent of Total owners
Under 100 acres _____	3,134,000	19.0	62,557	80.8
100 to 500 acres _____	2,120,000	12.9	14,265	18.4
500 to 5,000 acres _____	586,000	3.7	528	.7
5,000 to 50,000 acres _____	1,480,000	9.0	101	.1
Over 50,000 acres _____	9,099,000	55.4	28	•
Total all sizes _____	16,419,000	100.0	77,479	100.0

*Less than 1/10 of 1 per cent.

OWNERSHIP OF MAINE SAWTIMBER

	Board Feet	Per Cent of Total
Privately owned _____	27,740,000,000	98.3
Government owned or managed		
National forests _____	110,000,000	.4
Other federal _____	79,000,000	.3
State and municipal _____	297,000,000	1.0
Total government _____	486,000,000	1.7
Total All Ownerships _____	28,226,000,000	100.0

West where the federal government owns or manages more than half of the commercial forest land—the forests of Maine are almost entirely in private hands. The governments—federal, state and municipal—own about 1 per cent.

FORESTS IN MAINE'S ECONOMY

Maine's nickname, "The Pine Tree State," reveals the importance of its forests to its people. The white pine forests of Maine have been called, "The first gold the New England settlers struck." Early settlers vied with one another in offering grants of land and timber as inducements to build sawmills in their localities. At one time, lumber was used as a medium of exchange. In 1730 the town of Scarborough paid the schoolmaster in lumber for his services.

While a less cumbersome and more universally accepted medium of exchange is now in use, wood is still tremendously important in the economy of Maine. Wood-using industries are found in more than 350 cities and villages. Among all the industries they rank first in wages—paid to nearly 36,000 people—and first in value of products.

In an average year the pulp and paper industry alone pays \$3,750,000 in taxes to support state



and local governments, and other forest products industries add much more to those sums.

Timber and other forest products sold from Maine farms in 1955 brought farmers \$7,159,000 in cash. This amounts to over 7 per cent of the

income from the sale of all farm crops. Lumber, fence posts, fuelwood and other forest products used on the farm are not included in these figures. Only poultry products, potatoes, and dairy products exceed forest products in contribution to Maine farm income.

1954	All Industries	Forest Industries	Per Cent Forest Industries
Number persons employed _____	103,860	35,719	34.4
Annual salaries and wages _____	\$321,695,000	\$116,092,000	36.1
Value added by manufacture _____	\$562,238,000	\$216,889,000	38.6

MAINE FORESTS IN THE NATION'S ECONOMY

Although Maine has only 3.43 per cent of the nation's commercial forest, the state in 1955 ac-

counted for 8.2 per cent of the country's pulpwood production and around 40 per cent of the white pine lumber.

	United States	Maine	Maine Per Cent of U. S.
Total forest area (acres) _____	647,686,000	17,088,000	2.64
Commercial forest area (acres) _____	484,340,000	16,601,000	3.43
Growing stock (cu. ft.) _____	489,439,000,000	12,601,000,000	2.53
Sawtimber volume (bd. ft.) _____	1,967,789,000,000	24,839,000,000	1.26
Lumber production, 1955 (bd. ft.) _____	39,105,000,000	462,404,893	1.18
Pulpwood production, 1955 (cords) _____	30,894,000	2,533,674	8.2

THE PRODUCTS OF MAINE FORESTS

The versatility of Maine forests in meeting man's needs for wood products is remarkable. Maine timber goes into the smallest and the largest of wooden objects. From toothpicks—170,000,000 a day—to ships and houses, Maine trees are made into hundreds of articles necessary to our high standard of living.

Pulpwood accounts for more than half of Maine's annual timber harvest. Sawlogs—from which are made lumber, timbers, crossties and similar items—make up two fifths of the yearly cut. Veneer logs and bolts rank next to lumber and pulpwood in the timber harvest.

Other products—turnery products, barrels, shingles and minor articles—account for the remainder of the wood crop.

Christmas trees have been an important forest crop in Maine for many years. The annual Christmas tree harvest averages more than 1,000,000 trees, worth about \$500,000. Recently, growers and dealers in the state formed the Maine Christmas

Tree Association, with the objective of improving growing, grading and marketing practices.

MAINE'S TIMBER HARVEST*

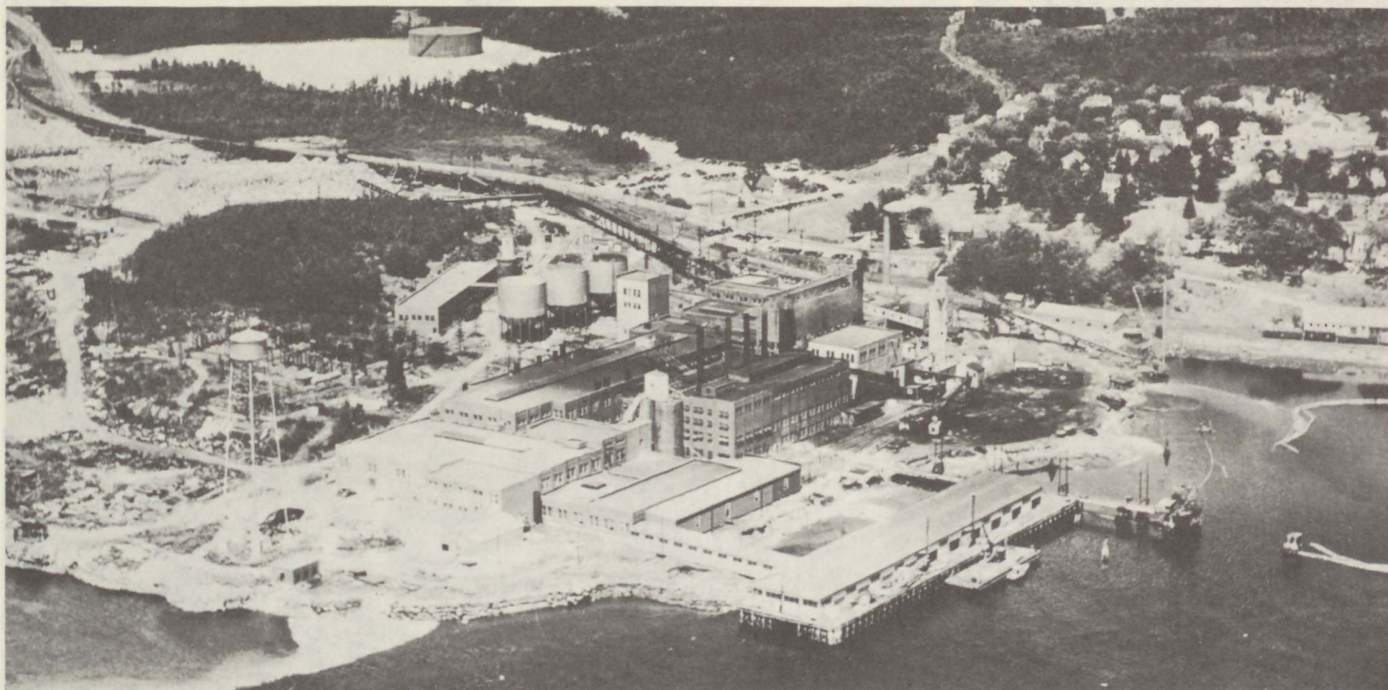
Product	Cubic Feet	Per Cent of Total
Pulpwood _____	151,170,000	53.1
Sawlogs _____	115,997,000	40.7
Veneer logs and bolts _____	7,900,000	2.8
All other products _____	9,752,000	3.4
Total All Products _____	284,819,000	100.0

*1952.

LUMBER PRODUCTION IN MAINE

The peak of Maine's lumber production was reached in 1909 with 1,111,565,000 board feet sawed. From that point it gradually declined until the 1940's, when it began to pick up again. In 1955 the state's lumber production was almost at the same level it was a hundred years ago.

White pine has always been important in lumber



Maine ranks fifth among all states in the production of paper and paperboard. This Maine pulp mill is one of several which contribute greatly to the state's economy by providing jobs and farm markets.

production in Maine. In 1869, 70 per cent of the total cut of 450,000,000 board feet was white pine. In 1949 the proportion of white pine was slightly over 50 per cent. Maine still remains one of the country's leading white pine-producing states

The earliest records of lumber production in Maine show only the value of lumber produced. The record commences in 1839, when production was valued at \$1,808,683; 1849—\$5,872,573; 1859—\$6,598,565.

Records of the amount of lumber produced commenced in 1869. The following table shows Maine's lumber production from that date. (Figures in thousands of board feet):

WHITE PINE LUMBER PRODUCTION IN THE
THREE LEADING PRODUCING STATES
(in board feet)

Year	Maine	New Hampshire	Idaho
1942	256,547,000	277,927,000	321,541,000
1943	186,633,000	319,612,000	298,609,000
1944	295,723,000	288,986,000	254,171,000
1945	262,149,000	224,738,000	220,321,000
1946	295,851,000	282,899,000	214,134,000
1947	315,333,000	235,486,000	208,537,000
1948	Not available	239,079,000	225,102,000
1949	272,198,000	184,344,000	227,036,000
1950	279,158,000	216,889,000	289,473,000
1951	336,655,000	247,732,000	223,485,000
1952	340,548,000	221,790,000	208,440,000
1953	332,757,000	209,002,000	Not available
1954	255,554,000	Not available	Not available
1955	235,220,000	Not available	Not available

1869	639,167	1917	770,000	1934	280,000
1879	580,082	1918	650,000	1935	320,000
1889	658,484	1919	596,116	1936	340,000
1899	784,647	1920	524,924	1937	355,000
1904	863,860	1921	451,125	1938	330,000
1905	745,705	1922	409,874	1939	327,428
1906	1,088,747	1923	416,520	1940	371,185
1907	1,103,808	1924	397,414	1941	425,134
1908	929,350	1925	331,641	1942	395,653
1909	1,111,565	1926	340,893	1943	288,084
1910	860,273	1927	263,818	1944	402,505
1911	828,417	1928	266,523	1945	373,608
1912	882,128	1929	330,000	1946	691,301
1913	834,673	1930	300,000	1947	459,271
1914	992,594	1931	240,000	1950	497,487
1915	1,000,000	1932	200,000	1951	585,082
1916	935,000	1933	210,000	1955	462,405



Maine is the leading state in the manufacture of white pine lumber. Here loggers harvest a mature specimen.

LUMBER PRODUCTION BY COUNTIES, 1955

County	Board Feet	Per Cent of Total
Androscoggin	22,022,015	4.8
Arrostock	50,179,306	10.9
Cumberland	47,237,044	10.2
Franklin	14,912,449	3.2
Hancock	10,577,088	2.3
Kennebec	24,722,405	5.3
Knox	5,535,098	1.2
Lincoln	17,554,549	3.8
Oxford	98,144,712	21.2
Penobscot	35,000,541	7.6
Piscataquis	18,206,823	3.9
Sagadahoc	2,600,058	0.6
Somerset	41,204,893	8.9
Waldo	16,510,830	3.6
Washington	11,079,012	2.4
York	46,918,070	10.1
State Total	462,404,893	100.0

MAINE'S PULP AND PAPER INDUSTRY

Maine is one of the leading states in pulp and paper production. In 1955 it ranked 5th in production of wood pulp with 1,483,783 tons—7.2 per cent of the nation's total output. Maine mills in 1955 made 1,603,170 tons of paper and paperboard—5.3 per cent of the national total—giving the Pine Tree State 7th ranking in that category.

There are 61 mills in Maine that make pulp, paper, paperboard or paper products. All are dependent on the forest for their raw materials. They give full-time employment to upwards of 17,000 workers—one out of every six persons employed in manufacturing. The annual wages and salaries of these people amount to \$71,628,000—a payroll exceeding that of any other manufacturing industry in the state.



Maine's annual harvest of pulpwood—over 2½ million cords—accounts for about 8 per cent of the nation's output. Maine pulpwood goes to pulp and paper mills in neighboring states as well as those at home.

PULPWOOD PRODUCTION BY COUNTIES, 1956

County	Cords (rough basis)		Total	Per Cent of State Total
	Hardwood	Softwood		
Androscoggin	14,557	13,186	27,743	1.0
Aroostook	11,002	648,417	659,519	24.8
Cumberland	27,539	34,767	62,306	2.3
Franklin	39,343	105,111	144,454	5.4
Hancock	6,589	71,341	77,930	2.9
Kennebec	22,013	35,345	57,358	2.2
Knox	637	20,749	21,386	0.8
Lincoln	4,861	25,676	30,537	1.1
Oxford	179,419	154,611	334,030	12.7
Penobscot	75,844	249,813	325,657	12.3
Piscataquis	14,220	210,060	224,280	8.4
Sagadahoc	1,790	11,310	13,100	0.5
Somerset	23,265	407,148	430,413	16.2
Waldo	3,474	27,035	30,509	1.2
Washington	7,969	171,011	178,980	6.7
York	16,209	23,479	39,688	1.5
Totals	448,731	2,209,159	2,657,890	100.0

Maine's annual harvest of pulpwood—presently accounting for about 8 per cent of the national total—feeds not only Maine mills, but it also helps supply mills in several neighboring states. The past decade has seen a sharp rise in pulpwood production with an increase in yearly output of more than 100 per cent.

PRODUCTION OF PULPWOOD IN MAINE

Year	Cords
1941	1,281,000
1944	1,200,000
1945	1,300,000
1950	1,557,189
1951	1,963,422
1952	1,957,449
1955	2,533,674
1956	2,657,890

MAINE'S TIMBER ACCOUNT

Latest studies of Maine's forests show that sawtimber is being removed faster than it is growing, but that the forest growing stock—all trees of commercial species, 5 inches and up—is growing faster than it is being removed.

The annual deficit of softwood sawtimber is a

little over 392 million board feet. Mortality losses—due to fire, insects, disease and other natural causes—account for one eighth of the total annual removal; the remainder is harvested for use. It is obvious that to bring the softwood sawtimber account into balance, mortality losses must be drastically reduced and growth must be improved through sound management.

Hardwood sawtimber shows an annual surplus of nearly 186 million board feet. Mortality losses in hardwood sawtimber are more than two times as great as those in softwoods.

A yearly surplus of almost 171 million cubic feet of hardwoods in the forest growing stock brings the growing stock account out of the red at year's end. This surplus more than compensates for an annual deficit of about 81 million cubic feet in softwoods.

Diseases are taking a heavy toll of Maine's forest resource. They account for more of the mortality losses than all other natural forces combined. This is true of both sawtimber and growing stock.

GROWTH AND REMOVAL IN MAINE FORESTS

SAWTIMBER (board feet)

	Gross Growth	Mortality*	Harvested For Use	Balance
Softwoods	590,000,000	127,000,000	860,081,000	- 397,081,000
Hardwoods	633,000,000	275,000,000	172,231,000	+ 185,769,000
All Species	1,223,000,000	402,000,000	1,032,312,000	- 211,312,000

GROWING STOCK (cubic feet)

	Gross Growth	Mortality*	Harvested For Use	Balance
Softwoods	189,000,000	48,000,000	221,687,000	- 80,687,000
Hardwoods	382,000,000	143,000,000	63,132,000	+ 170,868,000
Totals	571,000,000	196,000,000	284,819,000	+ 90,181,000

*Losses due to fire, insects, diseases, wind, animals, etc.

MORTALITY IN MAINE FORESTS

	Disease	Insects	Fire	Other*	Total
Sawtimber (bd. ft.)	303,000,000	30,000,000	3,000,000	66,000,000	402,000,000
Growing stock (cu.ft.)	154,000,000	10,000,000	1,000,000	31,000,000	196,000,000

*Wind, grazing, overcrowding, other natural causes.



Tree Farm certificates and signs are awarded private timberland owners who voluntarily manage and protect their woodlots in accordance with sound forestry practices of the Tree Farm program.

TREE FARMS IN MAINE

One of the brightest spots in Maine's forest picture is its Tree Farm program. The basic aim of this industry-sponsored, voluntary program is to bring more privately owned woodland under good management for continuing benefits to the owner, and to produce more and better timber and other benefits of the forests for the people of the state and the nation.

A Tree Farm is an area of privately owned, tax-paying forest land that is being used by its owner to grow repeated forest crops for man's use. Certified Tree Farms are enrolled in the industry-operated American Tree Farm System, active in 44 states.

In Maine, Tree Farms are sponsored by the Maine Committee of American Forest Products Industries, with the full cooperation of the Maine Forest Service. Maine was the fourth New England State to join the American Tree Farm System.

To qualify for Tree Farm certification, the forest property should meet the following standards:

1. It must have reasonably good protection from fire, insects, diseases and injurious grazing.
2. It must be managed under a systematic plan to

assure continuous production of commercial timber crops.

3. It should be at least 10 acres in size, generally. But exceptionally good tracts of small size may be considered for certification.

As of March 1, 1957, there were 192 certified Tree Farms in Maine, embracing 148,950 acres of well-managed privately owned forest land.

MAINE TREE FARMS AS OF MARCH 1, 1957

County	Number of Tree Farms*	Certified Acreage
Androscoggin	16	2,515
Aroostook	8	1,843
Cumberland	38	4,408
Franklin	9	1,826
Hancock	6	32,386
Kennebec	21	2,976
Knox	2	213
Lincoln	7	1,121
Oxford	28	12,904
Penobscot	8	39,892
Piscataquis	13	3,663
Sagadahoc	5	836
Somerset	9	2,102
Waldo	6	969
Washington	6	29,350
York	13	11,946
Total		148,950

*Several Tree Farms lie in more than one county.

REFORESTATION IN MAINE

Modern tree farming methods assure natural regeneration of the forests. But where natural seed sources have been destroyed by repeated burning or by land clearing or some catastrophe, it is necessary for man to plant seedlings or sow seed to bring back the forest in a reasonably short time. In Maine, reforestation is not much of a problem. Many of the wood-using industries and other private landowners are managing their properties to provide for natural reestablishment of the forests. And the forest trees of Maine, for the most part, will reseed themselves readily when given a reasonable chance.

There are two nurseries in Maine which produce forest tree seedlings—one owned and operated by the Maine Forest Service at Orono, and one privately owned at Fryeburg.

FOREST PLANTING IN MAINE

	1955	Previous Years	Total To Date
Government lands planted(acres)	44	1,589	1,633
Private lands planted (acres)	713	20,954	21,667
Total all lands planted	757	22,543	23,300

PROTECTION OF MAINE FORESTS FROM FIRE

The practical Yankee thrift of Maine's citizens is nowhere better demonstrated than in their concern with the protection of their forest properties from destructive agencies. This concern has been translated into decisive and effective action in the operation of forces and facilities for preventing and combating forest fires, and for discovering and controlling forest insects and tree diseases.

Early in this century Maine's forest land owners in the unorganized townships recognized the need for organized effort to reduce annual fire losses. (In the organized townships the fire departments handle their own forest fire problem). After several years of careful planning and intense effort they succeeded in effecting the passage by the legislature in 1909 of the Maine Forestry District Law. This plan is unique in forest fire control. It demonstrates the determination and cooperativeness of the people and the industries of the Pine Tree State.

Under the law, an administrative district is



created, consisting of all the unorganized townships and certain other areas adjacent to them. An amendment to the law, passed in 1913, permits any incorporated town or plantation bordering the district to become a part of it by town vote. It now embraces 10,262,455 acres—nearly two thirds of the forest land. Responsibility for fire protection in the district rests with the Forest Commissioner.

Unique is the fact that every landowner in the district contributes his proportionate share of the cost of protection from fire, through a tax levied on all property within the area. The tax is now four and three quarters mills on the dollar of property value.

After the large fires of 1947 the legislature placed the responsibility for the protection of all forest lands under the Forest Commissioner. While forest fires in organized towns are still the original responsibility of the town forest fire warden, the state forest fire warden may take over the management of any fire when he deems it advisable to do so.

Even before they succeeded in obtaining passage of the Maine Forestry District Law, the landowners

were taking steps to bring the fire menace under control. In 1905, on Big Squaw Mountain near Greenville, a lumber company erected the state's, and the nation's, first fire lookout tower. Quick to adopt new tools which show promise in detecting or in suppressing forest fires, Maine tried aircraft in 1927, the first New England state and one of the first in the country to do so. It is still the only New England state regularly using aircraft in this work.

In spite of the heavy burn of 1947, Maine's forest fire record in recent years attests to the effectiveness of the people's concern and the efficiency of the fire-fighting organizations. The figures that follow show that record.

Forest area under protection (acres)	
Maine forestry district _____	10,356,042
Organized towns _____	6,616,958
Average number of fires each year	
for the period 1943-1955 _____	593
Number of fires 1955 _____	
_____	503
Average area burned each year _____	
For the period 1943-1955 (acres) _____	27,770
Area burned 1955 (acres) _____	
_____	1,799
Federal land burned 1955 (acres) _____	
_____	17
State and private land burned 1955 (acres) _____	
_____	1,782
Number of fires on federal land _____	
_____	13
Number of fires on state and private land, 1955 _____	
_____	490

In order to intensify the campaign of public education in forest fire prevention, and to bring those efforts down to the "grass roots" level, a Keep Maine Green program was launched in 1948 with a full-time director. The directors of the state program are leading public figures interested in the conservation of woodlands—men from professional, civic, industrial, and governmental groups. County committees, composed of public-spirited citizens and headed by community leaders, operate the campaign in the counties. Through the media of fire prevention booklets, fire posters, motion pictures, windshield stickers, advertising mats for newspapers, and spot announcements for radio stations, the fire prevention message is carried to every community in the state.

STATE SUMMARY, 1955		
<i>Causes</i>	<i>Number of Fires</i>	<i>Per Cent of Total</i>
Smokers _____	137	28.0
Debris burning _____	96	19.6
Camp fires _____	64	13.1
Lightning _____	59	12.0
Incendiary _____	34	6.9
Logging _____	30	6.1
Railroads _____	3	0.6
Miscellaneous _____	67	13.7
Total _____	490	100.0

EXPENDITURES FOR FOREST FIRE PROTECTION, 1955

State and county funds _____	\$569,765
Federal funds _____	224,310
Total _____	\$794,075

CAUSES OF FOREST FIRES ON STATE AND PRIVATE LANDS BY COUNTIES 1955

<i>County</i>	<i>Light- ning</i>	<i>Rail- road</i>	<i>Camp Fires</i>	<i>Smokers</i>	<i>Debris Burning</i>	<i>Incen- diary</i>	<i>Log- ging</i>	<i>Misc.</i>	<i>Total</i>	<i>Acreage Burned</i>	<i>Total Damage</i>
Androscoggin _____	—	—	—	6	6	—	5	5	22	42	\$ 217
Aroostook _____	11	—	12	10	5	2	1	5	46	104	9,470
Cumberland _____	2	—	3	8	21	2	3	11	50	198	3,295
Franklin _____	1	—	—	7	3	—	—	1	12	41	371
Hancock _____	4	1	4	17	16	—	1	10	53	117	821
Kennebec _____	—	—	—	2	6	—	1	—	9	30	140
Knox _____	1	—	1	1	4	—	1	2	10	11	31
Lincoln _____	—	—	—	7	2	2	3	—	14	27	131
Oxford _____	5	—	3	9	8	—	1	6	32	27	142
Penobscot _____	8	1	7	13	1	4	2	3	39	78	349
Piscataquis _____	13	—	12	8	2	—	4	2	41	27	222
Sagadahoc _____	1	—	—	11	8	1	—	2	23	70	208
Somerset _____	7	—	16	12	—	—	1	6	42	99	5,290
Waldo _____	—	—	—	3	5	—	2	5	15	19	79
Washington _____	5	—	6	15	8	20	1	2	57	677	7,257
York _____	1	1	—	8	1	3	4	7	25	215	1,454
Totals _____	59	3	64	137	96	34	30	67	490	1,782	\$29,477
Per Cent of Total _____	12.0	.6	13.1	28.0	19.6	6.9	6.1	13.7			

PROTECTION FROM INSECTS AND DISEASES

Other enemies of Maine's forests are tree-destroying insects and diseases. Though less spectacular than roaring flames, insect enemies kill on the average 160 times as much timber each year as fire.

In 1921, Maine initiated an organized attack on insects which were destroying about \$3,000,000 of forest wealth annually. An entomologist was hired and plans were put into effect for observing insect population, trends and damage in every forested section in cooperation with the forest industries. Only in this way could outbreaks be located as soon as they started. There is no similar insect control organization in any other eastern state.

Fire wardens, insect rangers, industry workers and others in the detection forces gather bug specimens and parts of the trees which have been damaged and send them to the Entomological Laboratory at Augusta for identification. Areas of insect damage are mapped from an airplane to give the exact location of each outbreak. Since 1945 a

total of 34,800 insect collections have been made, studied, and reported on.

Recently work on control of the spruce budworm has been intensified. This insect has killed spruce and fir over vast areas in Canada and is now threatening Maine's forests. The bronze birch borer—helped by other factors—has killed from 60 to 70 per cent of the merchantable white and yellow birch since 1940. Beech scale and Nectria disease, which have killed about 26 per cent of the merchantable beech, are under attack over wide areas.

Insect and disease pests are getting serious attention from the protection forces. Better control methods are being sought through research. Insecticides to kill leaf-eating insects have been sprayed over wide areas by airplanes. Natural insect parasites are carefully cultivated and reared for release in Maine woodlands to prey upon tree-killing bugs.

The present progress of insect epidemics in Maine woodlands is summarized in the table which follows:

<i>Insect</i>	<i>Status in 1953</i>	<i>Status in 1956</i>
Balsam wooly aphid	Decreasing	Increasing, especially in West
Beech scale—Nectria	Abundant West and North	Continuing
Black-headed budworm	Local	Increasing North
Bronze birch borer	Decreasing	Light activity
European spruce sawfly	Increasing East	Continuing light
Forest tent caterpillar	Increasingly severe	Low ebb
Gypsy moth	Severe in South	Low ebb
Hemlock borer	Medium heavy in South	Light
Pales weevil	Heavy in South	Continuing
Pine leaf aphid	Abundant	Heavy in West and East
Poplar tortrix	Low	Increasing in West
Saddled prominent	Light	Abundant in Central
Spruce budworm	Intense T16R4, Light-medium 204 towns	Big increase in North and East
Sugar maple borer	Increasing	Continuing
White pine weevil	Increasingly abundant	Continuing—Red spruce and other pines show more attack.
Yellow-headed spruce sawfly	Light	Light

Less spectacular than either fire or insects but also very destructive are the diseases. Protection of its forests from tree diseases is one of Maine's chief problems. Among the most destructive is the white pine blister rust, a fungus disease which spends part of its life cycle on currant or gooseberry bushes before attacking white pine. It has been the object of intensive control measures not because it does more damage than other diseases, but because it attacks Maine's principal timber

species and it is relatively easy to control.

Attack on this disease was started in Maine in 1917—the year following its discovery there—and has been underway continuously since then. Control measures generally consist of uprooting and destroying all gooseberry and currant bushes from within and for a distance of 900 feet around the pine stands. Recently spraying the bushes with a 2-4-5-T hormone spray has proved effective.



Maine sawmills are producing around half a billion board feet of lumber a year—or about as much as was produced in the Pine Tree State 100 years ago. Much of the timber comes from Tree Farms.

To date the area on which control measures have been applied, or are planned, totals 2,442,700 acres. Detailed mapping has been completed on 88 per cent of this area. Initial eradication of gooseberry and currant bushes has been accomplished on 2,280,000 acres, and 1,375,334 acres have been worked a second time. Over 1,000,000

acres have been so thoroughly cleared of the bushes that they are considered safe from the disease for an indefinite number of years.

Other diseases to which control measures are being applied are the ash rust, the Dutch elm disease, and the eastern dwarf mistletoe which is attacking spruce along the coast.



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