MAINE PUBLIC DOCUMENTS

1950-51

(in three volumes)

VOLUME II

STATE OF MAINE

TWENTY-NINTH

BIENNIAL REPORT

of the

FOREST COMMISSIONER

A. D. NUTTING

1951-1952

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State of Maine

FOREST SERVICE

Augusta

June 30, 1953

Honorable Burton M. Cross
Governor of Maine
Dear Governor Cross:

In accordance with Section 14, Chapter 32, of the Revised Statutes of 1944, I have the honor to transmit herewith the Twenty-ninth Biennial Report for the years 1951-1952.

Respectfully yours,

A. D. NUTTING,
Forest Commissioner

MAINE FOREST SERVICE PERSONNEL

Forest Commissioner, A. D. Nutting, Augusta

Deputy Forest Commissioner, Austin H. Wilkins, Augusta

Supervisors, Maine Forestry District

George A. Faulkner, Ellsworth
Rex E. Gilpatrick, Clayton Lake
Robert G. Hutton, Greenville
Robert E. Pendleton, Island Falls

Assistant Supervisor, Glen H. Tingley, Island Falls

Organized Towns, Fred E. Holt, Augusta

Keep Maine Green and Tree Farm Program
Joel W. Marsh, Augusta

Farm Foresters

W. Robert Dinneen, Bridgton

Foresters

William J. Adams, Augusta
Richard Arsenault, Sanford
Sumner Burgess, Dixfield
Edwin Gerry, Island Falls
Harold Kilbreth, Jr., Machias
Robert Lawrence, Skowhegan
Elwin Macomber, Bangor
Stephen Orach, Gorham
Robert Umberger, Rockland

Radio Technician, E. Arthur Evans, Windsor Neck Hill

Assistant Radio Technicians

Russell Cram, Windsor Neck Hill (In Armed Services)
Clarence Thurston, Windsor Neck Hill

Pilots

Earl F. Crabb, Augusta
Charles S. Coe, Tramway

Dispatcher-Draftsmen

John Walker, Livermore Falls
Albert Willis, Augusta

Entomologists

State Entomologist, Henry B. Peirson, Augusta

Entomologists

Dr. Auburn E. Brower, Augusta
Charles S. Hood, Augusta
George A. LaBonte, Augusta
Robley W. Nash, Augusta

Laboratory Biologist, Horace Bell, Augusta

Shade Tree Specialist, Edwin R. Grove, Jr., Augusta

Forest Insect Rangers

Harold Bullock, Greenville
Harry Dyer, Stratton
James Holmes, Portage
Frank Manning, Augusta
George H. McGinley, E. Orland
Henry Willette, St. Francis

Blister Rust Control

Area Leader, Paul H. Simmonds, Augusta

District Leaders

Harrington G. Bradbury, Belfast
Martin G. Calderara, Auburn
Joseph B. Pike, Bridgton

Office Staff

Business Manager, William Whitman, Augusta
Secretary to Commissioner, Lillian Tschamler, Augusta

Clerks

Marion Blair
Madelyn Bullock
Ethel Fowler
Kathryn F. Larkin
Olive G. Ouellette
Mabel Rowell
Blanche L. Violette

Radio Operator, Katherine Emery, Augusta

INTRODUCTION

The Maine Forest Service believes it has made progress during 1951 and 1952 in better forest protection and leadership. However, forest fire, disease, and insect protection, as well as better timber harvesting programs, should always be geared to take on new and better methods.

1952 was the driest year for many seasons in the Maine Forestry District. The drought occurred in July and August, which are unusual months for forest fires in Maine. The state was warned by the 1947 disaster that forest fires are a problem and that preparations are necessary before fires occur.

Forest fire programs resulting from 1949 legislation in the organized towns had a major test during the biennium. Comments from town wardens, other public officials, and the general public have been that the program paid off. The increased Maine Forestry District tax, passed in 1949, enabled the District to purchase needed equipment and to start building a reserve for bad fire years. It was needed in 1952.

Acreage burned in 1952 was low considering weather conditions. Costs were high because of long patrol periods and high labor costs.

In the stepped-up program, the following features were emphasized:

Training

Training on 3 levels received much attention. Austin Wilkins, Deputy Forest Commissioner, devoted a great deal of time to organize and develop the program. He served for 2 years as chairman of the Northeastern Forest Fire Protection Commission training team. The Commission held 2 winter and 1 summer training session. 5 Maine men attended the schools.

In 1951 3-day regional training sessions were held in Rumford, Skowhegan, Ellsworth, Millinocket, Presque Isle, and Lac Frontiere, Quebec, for state wardens and industry cooperators. The 1952 schools were held at the same locations, except Lac Frontiere.

In 1952 Maine sent a 4-man training team to instruct the New Brunswick forest fire organization in Northeastern Forest Fire Protection Commission training methods. New Brunswick sent its telephone expert, Herbert Johnson, to all state warden schools

in 1952, to lead the discussion on telephone communication. The Department of Inland Fisheries and Game cooperated at the 1952 schools through the attendance of Earle Bradbury, Deputy Commissioner, and several warden supervisors.

A series of 4 town warden meetings were held each year. They were either afternoon or evening sessions.

The training on the 3 levels has resulted in a better trained forest fire organization from the deputy warden to the commissioner. The experience of 1951 and 1952 will serve as a basis for a more intensive and continued program of training.

Communication

Two-way radio communication has advanced forest fire control perhaps more than any phase except training. From a small beginning, the department has built its radio communication system in 2 years to one of the best forest fire networks in the Northeast. Every warden truck and every lookout tower in the organized towns had two-way radio in 1952. Nearly every chief warden district had 2 mobile (truck) radios in the Maine Forestry District and 28 lookout towers. In addition to departmental radio, 2 land-owning companies have tied in with our networks by providing us with 1 two-way radio on company networks. Other companies plan similar cooperation in 1953. The department expects to operate on 2 wave bands in 1953. Every area in the state can be reached by two-way radio within a few minutes by relays. Weather danger measurements and two-way radio are tied together very closely.

Equipment

Good equipment is a "must" in forest fire control. The department has continued the policy of confining purchases to light, mobile equipment and hiring heavy equipment where needed. The inventory will show the progress made during the past 2 years. Fire equipment should be kept up to date and in the best of condition, which means annual purchases rather than large amounts in one period and none in others.

Weather Measurement

Weather danger measurement stations have been increased from a few in 1943 to 44 in 1952. This expansion has resulted in making it possible to use daily danger readings as a basis for warden planning. It has also given the state much better U. S. Weather Bureau reports, especially in regard to wind direction

and velocity. Daily burning indexes are received from all weather danger stations via two-way radio by 4:30 P. M. each day.

Cooperation

During the past biennium the watchword of the department has been cooperation. It has tried to go much farther than 50% of the way with landowners and other state agencies. This policy paid off in 1952 when landowners contributed men and equipment wherever needed, whether on their land or others. The Inland Fisheries and Game warden pilots and wardens made forest fire their first duty during the dry summer of 1952. This department equipped the Fish and Game planes with two-way radio.

Prevention

Joel Marsh was transferred from entomology to serve as Keep Maine Green supervisor in late 1951 to carry on an intensive forest fire prevention program. His leadership in assisting the County Keep Maine Green chairmen and the warden force in prevention has met a long need of the department.

Planning

Progress was made on a state forest fire plan. Planning was the basis of the stepped-up forest fire program.

Entomology

The entomology division has continued its intensive detection program and analysis of insect trends. More and better cooperation has been given by fire wardens and industry.

A forest insect and disease school was held in the spring of 1952 for state and industry personnel. Federal pathologists and entomologists assisted in putting on the school. "Forest Insect Notes," the entomology quarterly, continued to be popular and to have an increased demand. No serious new insect or disease outbreaks occurred during the biennium. The spruce budworm continued to be a very serious threat. The fir bark louse increased, while the bronze birch borer damage halted or lessened.

Service (Farm) Forestry

Increased state and federal funds made it possible to expand the farm (service) forestry program in July of 1951. During the last 6 months of 1952 the division had 9 field foresters and 1 supervisor. Western and central Maine had reasonably good coverage for service to small woodland owners. At least 3 additional

men are needed to give eastern and northern sections of the state similar service.

Foresters spent much of 1951 in training and getting acquainted. Their work in 1952 emphasized timber marking and marketing. The 3 major objectives of this program have been:

1. Better forest management in Maine for the public good.
2. Aid to small woodland owners in how to cut and market their timber.
3. To give foresters experience in forest management to provide leadership.

General

Maine joined the Tree Farm movement in 1952, which is jointly sponsored by Maine forest industries and the Maine Forest Service. 4 Tree Farms were dedicated in 1952. This public recognition of outstanding forest management through certification of Tree Farms should prove a great benefit to forest practice.

Forest Forums in eastern and western Maine not only held their own in 1951 and 1952, but increased their attendance at monthly meetings from November through May.

Marking trees for cutting has long been considered the best means for foresters to control the timber cut. 2 land-owning companies, the Dead River Company in 1951, and the Penobscot Development Company in 1952, marked sizeable areas for cutting. It is hoped this will prove to be a trend toward the search for and the carrying out of better forest practice.

The Legislative Research Committee held two hearings on forest taxation. The discussions and recommendations were to serve as a basis for forest tax legislation in the 1953 legislature, using productivity as a basis. The department tried to be helpful with facts and information requested by both the committee and landowners.

The timber cut reports were continued. For the most part, industry cooperated to provide almost a 100% return.

The Maine Forest Service policy is to provide leadership and encouragement in better protection and management of the state's forests.

MAINE FORESTRY DEPARTMENT RECEIPTS
January 1, 1951 - December 31, 1951

	FIRE CONTROL			PEST CONTROL		ADMINISTRATION AND MANAGEMENT					Total
	Organized Town Reimbursement	Organized Towns	Forestry District	Blister Rust	Entomology	Administration	Public Lands	Public Lots	Forest Nursery	Management Aid	
Legislative Appropriation	$45,000.00	$167,570.00	—	$15,099.00	$70,001.00	$18,946.00	—	—	$5,600.00	$25,562.00	$347,778.00
Maine Forestry District Tax	—	—	$348,509.08	—	—	—	—	—	—	—	348,509.08
Miscellaneous Taxes	2,664.73	—	—	—	—	—	—	—	—	—	2,664.73
Transfers from Contingent Fund	—	—	—	—	—	1,259.40	—	—	—	—	1,259.40
Transfers, Other Appropriations	3,600.00	2,724.00	853.67	30.00	(3,359.00)	740.00	($925.00)	$5,000.00	325.00	923.00	9,911.67
Federal Cooperation	—	40,000.00	145,919.50	—	—	—	—	—	3,416.02	5,701.18	195,036.70
Portable Sawmill Licenses	—	5,450.00	—	—	—	—	—	—	—	—	5,450.00
Tree Surgeons Licenses	—	—	—	—	451.00	—	—	—	—	—	451.00
Sale of Nursery Stock	—	—	—	—	—	—	—	—	1,540.81	—	1,540.81
Rent Income	—	265.00	—	—	—	—	—	—	—	—	265.00
Miscellaneous Fees and Income	—	.10	466.36	—	—	62.25	—	—	—	—	528.71
Private Contributions	—	—	1,197.04	—	—	—	—	—	—	—	1,197.04
Totals	$51,264.73	$216,009.10	$496,945.65	$15,129.00	$67,093.00	$21,007.65	($925.00)	$5,000.00	$10,881.83	$32,186.18	$914,592.14

FINANCIAL STATEMENT

Balance January 1, 1951	$2,024.22	$118,569.54	$90,504.55	$3,290.97	$33,688.11	$5,741.88	$944.88	$2,592.76	$1,713.52	$62.20	$259,132.63
Income, 1951	51,264.73	216,009.10	496,945.65	15,129.00	67,093.00	21,007.65	(925.00)	5,000.00	10,881.83	32,186.18	914,592.14
	53,288.95	334,578.64	587,450.20	18,419.97	100,781.11	26,749.53	19.88	7,592.76	12,595.35	32,248.38	1,173,724.77
Disbursements, 1951	13,390.25	273,628.06	445,193.98	9,711.23	64,687.95	17,045.00	18.93	3,713.31	9,378.77	20,948.77	857,715.95
	39,898.70	60,950.58	142,256.22	8,708.74	36,093.16	9,704.53	.95	3,879.45	3,216.88	11,299.61	316,008.82
Lapsed to State Surplus	29.15	—	—	.10	180.94	16.26	.95	924.69	260.47	129.63	1,542.19
Balance, December 31, 1951	$39,869.55	$60,950.58	$142,256.22	$8,708.64	$35,912.22	$9,688.27		$2,954.76	$2,956.41	$11,169.98	$315,466.63

MAINE FORESTRY DEPARTMENT EXPENDITURES
January 1, 1951 - December 31, 1951

	FIRE CONTROL			PEST CONTROL		ADMINISTRATION AND MANAGEMENT					Total
	Organized Town Reimbursement	Organized Towns	Forestry District	Blister Rust	Entomology	Administration	Public Lands	Public Lots	Forest Nursery	Management Aid	
Personal Services	—	$154,683.36	$247,093.35	$2,499.63	$44,334.41	$9,269.88	—	$2,451.95	$5,036.29	$13,520.00	$478,888.87
Special Services	—	90.50	—	—	965.13	—	$10.96	156.86	59.39	—	1,282.84
Fire Suppression	—	—	7,690.06	—	—	—	—	—	—	—	7,690.06
Reimbursement to Cities and Towns	$13,389.25	—	—	7,074.17	—	—	—	—	—	—	20,463.42
Traveling Expenses	—	7,620.94	6,771.68	—	9,068.62	—	—	371.81	136.16	5,381.83	29,351.04
Operation State Cars	—	—	2,903.10	—	—	—	—	—	—	—	2,903.10
Operation State Trucks and Vehicles	—	19,378.99	23,559.85	—	308.05	—	—	—	323.97	—	43,570.86
Plane Operation	—	—	4,791.20	—	—	—	—	—	—	—	4,791.20
Utility Services	—	5,782.58	4,057.60	—	187.31	1,314.82	—	—	123.65	—	11,465.96
Rents	—	280.00	1,125.42	12.00	54.00	—	—	—	—	—	1,471.42
Building and Other Repairs	—	7,733.63	11,312.82	—	191.53	200.90	—	17.00	67.92	6.06	19,529.86
Insurance	—	10.00	2,680.82	—	100.12	—	—	—	—	—	2,790.94
General Operating Expenses	1.00	2,614.71	3,682.01	86.69	5,121.15	2,537.78	7.97	20.24	58.01	72.46	14,202.02
Food on Construction	—	—	1,687.13	—	—	—	—	—	—	—	1,687.13
Fuel	—	668.43	239.17	—	203.93	—	—	—	—	—	1,111.53
Office Supplies	—	832.22	738.74	—	183.53	1,234.97	—	—	71.85	67.38	3,128.69
Camp and Headquarters Supplies	—	5,328.68	6,657.49	38.74	582.37	109.16	—	28.55	2,262.80	596.06	15,603.85
Accident Compensation	—	160.00	1,633.62	—	31.00	—	—	—	4.00	5.00	1,833.62
Land Purchases	—	471.59	125.00	—	—	—	—	—	—	—	596.59
New Buildings and Additions	—	19,661.28	16,038.43	—	1,529.13	—	—	—	541.74	—	37,770.58
New Equipment	—	48,311.15	102,406.49	—	1,827.67	67.49	—	666.90	692.69	1,299.98	155,272.37
Northeastern Compact	—	—	—	—	—	2,310.00	—	—	—	—	2,310.00
Totals	$13,390.25	$273,628.06	$445,193.98	$9,711.23	$64,687.95	$17,045.00	$18.93	$3,713.31	$9,378.47	$20,948.77	$857,715.95

MAINE FORESTRY DEPARTMENT RECEIPTS
January 1, 1952 - December 31, 1952

	FIRE CONTROL			PEST CONTROL		ADMINISTRATION & MANAGEMENT				Total
	Organized Town Reimbursement	Organized Towns	Forestry District	Blister Rust	Entomology	Administration	Public Lots	Forest Nursery	Management Aid	
Legislative Appropriation	$45,000.00	$167,747.00	—	$15,099.00	$68,969.00	$17,546.00	—	$6,000.00	$25,562.00	$345,923.00
Maine Forestry District Tax	—	—	$348,516.13	—	—	—	—	—	—	348,516.13
Miscellaneous Taxes	2,373.45	300.00	—	—	—	—	—	—	—	2,673.45
Transfers from Contingent Fund	31,500.00	—	—	—	—	—	—	—	—	31,500.00
Transfers from Other Appropriations	—	(381.60)	9,522.72	—	—	381.60	$5,000.00	—	—	14,522.72
*Federal Cooperation	—	148,342.64	274,176.16	—	—	—	—	6,783.63	18,000.00	447,302.43
Portable Sawmill Licenses	—	4,200.00	—	—	—	—	—	—	—	4,200.00
Tree Surgeons Licenses	—	—	—	—	482.00	—	—	—	—	482.00
Sale of Nursery Stock	—	—	—	—	—	—	—	5,962.63	—	5,962.63
Rent Income	—	735.00	—	—	—	—	—	—	—	735.00
Miscellaneous Fees and Income	—	58.50	172.53	—	—	47.15	—	—	—	278.18
Private Contributions	—	—	1,321.00	—	—	—	—	—	—	1,321.00
Loan from State Surplus	—	—	270,000.00	—	—	—	—	—	—	270,000.00
Totals	$78,873.45	$321,001.54	$903,708.54	$15,099.00	$69,451.00	$17,974.75	$5,000.00	$18,746.26	$43,562.00	$1,473,416.54

*Federal allotments are made on a June 30, fiscal year basis. Heavy fire costs have made it possible and advisable to apply for federal fire money in the fall of 1952, that normally would have been received in 1953. There is, therefore, nearly two years of federal money (fire) in this calendar year.

FINANCIAL STATEMENT

Balance January 1, 1952	39,869.55	60,950.58	142,256.22	8,708.64	35,912.22	9,688.27	2,954.76	2,956.41	11,169.98	314,466.63
Income, 1952	78,873.45	321,001.54	903,708.54	15,099.00	69,451.00	17,974.75	5,000.00	18,746.26	43,562.00	1,473,416.54
	118,743.00	381,952.12	1,045,964.76	23,807.64	105,363.22	27,663.02	7,954.76	21,702.67	54,731.98	1,787,883.17
Disbursements, 1952	80,999.44	258,918.64	743,182.95	17,545.99	63,503.62	19,397.58	2,411.33	18,292.41	43,996.61	1,248,248.57
	37,743.56	123,033.48	302,781.81	6,261.65	41,859.60	8,265.44	5,543.43	3,410.26	10,735.37	539,634.60
Lapsed to Surplus	32,831.82	205.01	—	754.95	5,252.76	126.23	1,208.97	—	—	40,399.74
Balance, December 31, 1952	4,891.74	122,828.47	302,781.81	5,506.70	36,606.84	8,139.21	4,334.46	3,410.26	10,735.37	499,234.86
1952 Fire Bills paid in 1953	4,461.83	—	108,130.04	—	—	—	—	—	—	112,591.87
	429.91	122,828.47	194,651.77	5,506.70	36,606.84	8,139.21	4,334.46	3,410.26	10,735.37	386,642.99

The Biennial Report is on a calendar year basis. State finances are on a June 30, fiscal year basis. December 31 balances are for operating expenses until June 30 of the following year.

MAINE FORESTRY DEPARTMENT EXPENDITURES
January 1, 1952 - December 31, 1952

	FIRE CONTROL			PEST CONTROL		ADMINISTRATION & MANAGEMENT				
	Organized Town Reimbursement	Organized Towns	Forestry District	Blister Rust	Entomology	Administration	Public Lots	Forest Nursery	Management Aid	Total
Personal Services	—	$170,242.72	$265,514.37	$7,250.67	$47,116.11	$8,979.09	$1,755.47	$6,948.48	$31,463.00	$539,269.91
Special Services	—	22.70	—	—	2,666.00	—	83.42	842.00	—	3,614.12
Fire Suppression	—	—	*439,532.97	—	—	—	—	—	—	439,532.97
Reimbursement to Cities and Towns	*85,366.80	—	—	10,272.14	—	—	—	—	—	95,638.94
Traveling Expenses	—	7,886.78	8,166.07	3.03	7,711.38	—	508.60	338.44	9,944.81	34,559.11
Plane Rentals	—	—	4,803.09	—	—	—	—	—	—	4,803.09
Operation State Vehicles	—	20,319.19	32,065.90	—	622.75	—	—	269.02	—	53,276.86
Operation State Planes	—	—	4,204.79	—	—	—	—	—	—	4,204.79
Utility Services	—	6,131.26	4,974.96	—	230.22	1,911.93	—	205.41	—	13,453.78
Rents	—	294.17	285.58	14.00	64.00	—	—	—	—	657.75
Buildings and Other Repairs	—	6,131.16	17,578.94	—	604.93	73.39	—	152.63	16.30	24,557.35
Insurance	—	579.94	4,566.62	—	109.95	22.14	—	—	—	5,278.65
General Operating Expenses	94.47	2,840.02	2,066.85	4.65	758.17	4,105.22	37.84	113.68	51.51	10,072.41
Food on Construction	—	95.34	911.27	—	—	—	—	—	—	1,006.61
Fuel	—	712.06	431.94	—	236.05	—	—	—	—	1,380.05
Office Supplies	—	519.46	584.04	—	224.26	1,738.93	—	145.94	127.33	3,339.96
Camp & Headquarters Supplies	—	3,699.35	7,103.26	1.50	1,191.20	28.18	26.00	8,099.04	1,288.96	21,437.49
Accident Compensation	—	21.50	3,125.58	—	4.00	—	—	—	13.25	3,164.33
Land Purchases	—	1,407.41	100.00	—	—	—	—	—	—	1,507.41
New Buildings and Additions	—	20,700.21	7,365.28	—	403.03	—	—	828.62	—	29,297.14
New Equipment	—	17,315.37	47,931.48	—	1,561.57	228.70	—	349.15	1,091.45	68,477.72
Northeastern Compact	—	—	—	—	—	2,310.00	—	—	—	2,310.00
Totals	$85,461.27	$258,918.64	$851,312.99	$17,545.99	$63,503.62	$19,397.58	$2,411.33	$18,292.41	$43,996.61	$1,360,840.44
*Includes 1952 Expenses paid in 1953	4,461.83		108,130.04							

MAINE FORESTRY DISTRICT

10,262,455 Acres

The same 4 supervisors, helping supervise the 25 chief warden districts, represented the commissioner, as previously. Several chief warden changes were necessary during the biennium, largely due to resignations to take other work. These will be covered in the reports of the supervisors. Such a large percentage of changes meant extra training in forest fire control and administration.

The Maine Forestry District personnel and organization had its greatest test during the summer of 1952, with the driest weather in a number of years, climaxed with 14 major fires on August 4. Acreage burned was kept small; in fact, not too much more than in a normal year. Everyone cooperated to make the record possible. Wardens were transferred from districts without fires to major fires with good results. This was the first time such wholesale shifting of men had been carried out. It provided the best trained men in the Maine Forestry District for fire bosses and also gave fire experience to many men who otherwise would not have received it. Industry and operators provided foresters, equipment, and fire fighters which were major factors in keeping the acreage small. The Department of Inland Fisheries and Game provided the most help ever given to the Maine Forestry District. Their planes and wardens were available at all times and forest fires received first call on their time.

Good progress was made on the replacement of dilapidated buildings and the addition of needed new ones in 1951. The bad fire season of 1952 slowed up the program. Practically all construction work was done by the warden force. Storehouses and living facilities at each warden quarters are planned as time and money permit.

Radio was very valuable during the dry summer of 1952. Many wardens said the only trouble was that there were not enough of them. Each chief warden district has 1 mobile and 1 Handie-talkie, with an average of 2 mobiles and 1 Handie-talkie per district. Nothing increased the efficiency of the Maine Forestry District more than radio during the biennium. It has not only proved to be necessary for communications on fires, but the best means of keeping the wardens on their toes and informed during dry periods by weather reporting. Through Musquash tower, the

Eastern Pulp Wood Company in 1951, and through Medford tower, the Penobscot Development Company in 1952, tied their radio systems in with the network of the department. 1952 forest fires showed the value of having these additional bands available in peak fire periods. It is hoped that other companies will tie in their radio networks with forestry as soon as they can. The inventory of radio shows how far it has now developed. Future plans should provide radio for all Maine Forestry District vehicles and lookout towers.

During the biennium, the Maine Forestry District operated a 2-place Aeronca plane which was based at the Tramway in the Chamberlain district. It primarily served the northern division. It was used on fires in both the central and western divisions and for dropping supplies by parachute at isolated towers. The 4-place Seabee was based at Augusta and was used for heavy freighting over the entire Maine Forestry District. It also did most of the fire scouting in the eastern division. Plans are being made to trade it before next season.

2 of the supervisors and 1 chief warden participated in major forest fire training on a Northeastern Forest Fire Compact basis. They served as trainers of Maine Forestry District personnel. Joint 3-day training schools were held for District and organized town wardens. To completely train all personnel would take a number of days. Gradually, through short training schools, it is believed that a better and better trained force is being developed. However, training of seasonal personnel will always have to remain a responsibility of the chief wardens, under the direction of the supervisors.

The District was able to start building up an emergency forest fire fighting fund, about $80,000, in 1951. The dry summer of 1952 soon depleted this and additional funds were required from the general fund surplus. At the suggestion of the forest commissioner, and advice of the advisory committee of the Maine Forestry District landowners, it was voted at a December meeting to recommend to the legislature an increase in the District tax of 4 mills in 1953 to pay back the money borrowed from the general fund surplus. An increase in the District valuation is expected to make it possible to operate, under normal fire conditions, at the same rate as in 1951 and 1952 (5½ mills).

In accordance with a change in state policy, all special revenue accounts will pay state retirement fund costs. This will require about $15,000 annually. State salaries are expected to be in-

creased for the coming biennium. Considering retirement costs and increased salaries, together with higher equipment costs, maintaining the same force will increase operating costs from $35,000 to $50,000.

From present indications, maintenance of roads for forest fire purposes may become a serious problem in the years ahead.

The State Highway Department has started a roadside lunch ground program which should release the District from this field. It is hoped that landowners, the Highway Commission, and this department will cooperate closely to keep such areas "Forest fire safe."

Dry summers have increased the demand for camp sites authorized by the forest commissioner which, by law, are usable during the Governor's fire ban. The need, demand, maintenance, and care of these areas are problems being given careful consideration.

Cooperation is the basic requirement for a good District forest fire control program. Certainly the past biennium has been one of increased cooperation in sound financing, training, and fighting forest fires.

The inventory summaries should be reviewed to obtain information on progress on equipment.

Each supervisor has written a report on activities in his division during the biennium.

Northern Division—2,241,348 Acres

Rex Gilpatrick, Supervisor

Allagash District. Stanley Drake, Chief Warden—5 Patrolmen —2 Watchmen

1951

The spring work was started this year after the personnel had attended the annual warden training school at Presque Isle. At the close of the 3-day session some of the patrolmen were on spring work repairing the telephone lines which had been crippled by the winter storms.

When this work was completed there were several repair jobs to be done on camps and storehouses. Other work was an addition to the storehouse at the mouth of the Allagash River, a new

roof on the storehouse at Estcourt, repair of the roof on the tower at Round Pond Mt. which had been damaged by a wind storm, a cesspool at the watchman's camp and later in the summer a new roof on the watchman's camp at Rocky Mt.

The major equipment placed in the district this year includes 2 new Pacific Marine, Type N, power pumps with 2,000 feet of new 1½" linen hose, 1, Type A, power pump with 1,000 feet of 1" linen hose, 1 20-foot canoe, 1 new Jeep with a mobile radio set installed, and a radio set installed in an old pick-up.

1952

New radio pack sets were installed on Round Pond Mt. and Rocky Mt. towers this spring. The radio set that was installed in the old Ford last year was removed and placed in a new overhead valve Ford this year. The new pack set on Rocky Mt. has been a great addition to the equipment in this district. The chief warden is now able to keep in contact with the watchmen in any part of his district by radio. This is a great help in contacting the men while travelling by truck in the district.

This district is now very well taken care of with major equipment. Due in part to its geographical location, it will probably need replacements for some of this equipment more often than other districts because of the frequency with which it has to be used.

A fire, which undoubtedly was of incendiary origin, burned over 1,200 acres of cut-over land near Little Fall Brook Pond this summer. The department's small plane with its pack set radio was of much assistance to the men in suppressing the fire. Handie-talkies were used on the fire line.

A newly bulldozed road in a pulp operation in the Nigger Brook area made it necessary to relocate and build about 4 miles of new telephone line on the Maine Forestry District circuit to DeBoulie Mt. this summer.

Madawaska District. Paul Chamberlain, Chief Warden—2 Patrolmen—2 Watchmen

The personnel in this district attended the annual warden training school at Presque Isle, after which the chief warden and the patrolmen went to work on the telephone line repair work, as usual.

After the line work was completed, logs were cut and dragged out and later sawn into 1,200 feet of lumber for repair work in the district. There was sufficient to also build some fire tool boxes

to be located at different places available for the deputy wardens. Also built was a 20-foot cedar square stern boat. This boat is for use on Cross, Square, and Eagle Lakes when the lakes at times become rough.

The camp and storehouse at Cross Lake received a new coat of shingle stain and paint that makes it very attractive among the other cottages. Also built were 2 new camp sites with fireplaces and 3 lunch grounds were repaired. During the summer 66 new poles were cut and peeled to replace old ones full of woodpecker holes. After the middle of August 14 miles of telephone line were bushed out from Goddard Brook to Three Brooks tower. Telephone lines were bushed from the tower to the district line at Pennington Brook.

The major new equipment for the district this year consisted of a new pick-up truck with pack set installed and a Handie-talkie set.

1952

This year a new lunch ground was built at Carry Brook on Route 161 and others repaired along this road that had been damaged by vandals.

A replacement of 64 poles was made on the telephone line from Route 161 to Stockholm tower, a distance of 3 miles. It was necessary to haul gravel to repair the department's private way one-third mile from the main road in Stockholm to the tower.

The chief warden and patrolmen made some changes on the inside of the storehouse at headquarters this summer which makes it easier to store and care for the equipment. A wangan box was built to take care of wangan which is expected to be enlarged upon soon.

Chamberlain District. Fortunat Vaillancourt, Chief Warden—2 Patrolmen—1 Watchman

1951

This year there was an unusual amount of telephone line repair work caused by the winter storms and the job done to the wires by moose in the late fall. In some places there were from ¼ to ½ mile pieces of wire completely gone. This was caused by the moose getting their horns caught in the wire and walking off with it. The work was done on snowshoes early in the spring before the brooks were open. By using the small plane on skis it was possible to move the wardens from the headquarters camp to the district boundaries on each circuit and save many miles of

foot travel and time. The pilot would fly the men in this and the Musquacook district, and when not flying would work with the men. This way got the men back to their headquarters at night without losing so much time travelling.

While the snow is going off there is always plenty of work to do in getting the canoes, boats, and camp painting done before the fire season begins.

There was a lot of line bushing to do this summer when the men were not chasing up lightning fires. This district is in what is known as a lightning zone, where more fires of this type occur than in all other districts.

The new Type A power pump and 1" linen hose make an ideal piece of equipment for getting at the lightning fires. As the pump weighs only 37 pounds and is compact, it can easily be carried in the plane with 300 feet of 1" hose and a man, to land as near as possible to a fire. The plane can then return to pick up another man and more hose.

1952

Telephone line work started earlier than usual this year while it was good snowshoeing. It proved to be a good thing to start early as the rains came down steadily from the middle of May to the latter part of June. It cleared off with strong, warm winds for about a week. This warm spell ended with a terrific lightning storm that lasted all day and part of the night without much rain.

In early July lightning fires sprang up everywhere at once in this and adjacent districts. One lightning strike was on the west shore of Poland Pond, in T. 7, R. 15. There was a strong west wind blowing which soon deposited burning embers from the tree that was struck into dry meadow grass on the shore. This is a flowage pond with dri-ki and dead grass around the shores and on several islands across the narrow stretch of water to the east shore. It did not take the fire long to get across the pond, sweep through the dri-ki and up the pinnacles and ravines ahead of it. This pond is located in about the most isolated part of the state as far as transportation is concerned. There are no roads, trails, or navigable waters on which to transport anything. Men, equipment, and supplies had to be flown in from miles away. There were 70 men, 10 power pumps, and many thousand feet of hose to fly in and it took many planes flying steadily to do the job the first day. It was under control within a week and held from spreading any more. It burned only about 100 acres of green

standing timber but about twice that of meadow and dri-ki. While this fire was burning several more lightning fires started in this district which were suppressed with little or no damage.

Musquacook District. Annas F. Bridges, Chief Warden—2 Watchmen—3 Patrolmen

1951

There are over 120 miles of telephone line to maintain in this district. 44 miles of the line are along a gravelled road from Lac Frontiere to Churchill Dam. Work started on the lines along the rivers while the brooks, streams, and deadwaters were frozen in order to cross on the ice, as there are no bridges. As soon as the line work was done the men had the boats and canoes to scrape and paint, with outside painting on the camps that need it done last.

This year the watchman's camp at Priestly Mt. was rebuilt. It was built of logs 25 years ago and set on the ground which caused the bottom logs and floor stringers to rot. Some of the logs had rotted so badly that snakes and mice could get inside the camp. The chief warden decided the best and cheapest way would be to jack up the camp, remove the decayed parts and replace with new wood, then slide it sidewise on to a new base. It was quite a job, but with the addition of a new veranda it is completed. It is now solid from the foundation up and is very attractive. A new wharf was built in front of the camp on the shore of the lake so that the plane can dock there and be tied up without the help of the watchman.

After this work was completed the patrolmen worked from time to time on a new chief warden camp that was needed to replace the old log camp that was decayed underneath. The foundation for this camp was started last year. The main camp has been built this year but is not finished on the inside.

A new patrolman's camp at Churchill Dam is badly needed. When the LaCroix Company was operating there 15 years ago it had several camps. When operations were suspended, the camps were left vacant. The department has used one of these for a patrolman as long as it held together, then moved to the next best and occupied it while it lasted. Now all have become unliveable and a new camp is needed. The successors to the LaCroix Company built an open air sawmill with a rotary saw, an edger, and a trim saw to saw out rough lumber for several camps they are building on adjacent townships. It is located at Churchill Dam

and will be available for department men to use from time to time to saw out repair timber and also to saw the lumber needed for the new camp here.

A new Ford pick-up truck, replacing an old one, equipped with a mobile radio unit, along with a Handie-talkie set, has been of great help in this district.

1952

Work was started on the telephone lines this year at about the same time as in the Chamberlain district. Arrangements were made with the pilot to fly the men from both districts, to their work each morning, which saved many hours of needless walking. By so doing the men worked back toward headquarters and were picked up at some nearby designated spot on the lake or river.

After finishing the line work, the men worked on boats and canoes, getting the paint jobs finished. The months of May and June were wet and much time was spent working on the inside of the new chief warden camp that was erected last year. Through July and August it was necessary to work near Umsaskis Lake where men could be sent in a hurry to the many lightning fires that got started because of the drought.

Two new power pumps were received this year: one a Type A with 1,000 feet of 1" hose, and a Type N with 2,000 feet of 1½" hose. A mobile radio unit was installed in the 1½ ton truck.

Upper St. John District. Luther Savage, 1951; Chester Goding, 1952, Chief Warden—3 Patrolmen—1 Watchman

1951

This district has the most extensive pulp and logging operations of any area in the northern zone at the present time. Judging by the many bulldozed and gravelled roads, in several directions, it will be heavily operated for several years. Many of these roads extend from the Canadian border in an easterly direction across several branches of the upper St. John River and beyond the main river to the east. These are roads of the International Paper Company whose headquarters for the St. John watershed are located on the Maine side of the boundary near the Town of St. Aurele in the Province of Quebec. This company has some nice, modern, motorized fire fighting equipment and is very cooperative with our fire wardens in suppressing fires on either side of the boundary.

Some of these bulldozed roads, with their many branches, cross and parallel our telephone lines. This makes it necessary to keep

relocating and repairing the lines in order to serve the operating area best as the men are needed for fire fighting crews.

Baker Lake, in the south-central part of this district, is the only body of water where the department plane can land. It will probably be necessary in the future to establish a temporary patrolman here with a new camp and storehouse in order to dispatch equipment and supplies in a hurry to some fire. The International Paper Company is planning to extend their main road easterly across the river at the foot of the lake to St. Francis Pond. If and when the Great Northern Paper Company extend their Campbell Brook road in a northerly direction along the east shore of Baker Lake to Desolation Pond, it will be imperative to have more fire fighting equipment near the intersection of these roads.

1952

Chester Goding started this season as chief warden in this district to replace Luther Savage who went back to the Allagash district as patrolman and scaler for the landowners under Stanley Drake. Goding spent several seasons in other districts as a patrolman and watchman. He is familiar with all branches of the work and is very much interested, as shown by the cooperation he has received by all of the operators in this region.

This has been a good summer for bulldozing roads, due in part to the extended drought. The International Paper Company has extended their main road across the Baker branch of the St. John River and on toward its destination at St. Francis Lake. It is reported that the Great Northern Paper Company is planning to extend their Campbell Brook road north to Desolation Pond in the immediate future. These roads will open up some of the most isolated territory in the country to automobile travel.

A new Jeep, equipped with a mobile radio set, was used on the boundary patrol with headquarters on the Maine side of the boundary near St. Cyprien, Province of Quebec. This has proven to be a good investment as the lookout tower on Hardwood Mt. has a pack set radio and can keep in touch with the patrolman at any hour of the day.

Several small lightning and lunch ground fires occurred in this district this year which were quickly suppressed as the result of prompt action and modern equipment.

Seven Islands District. Harold Pelletier, Chief Warden—3 Patrolmen—1 Watchman

There was the usual amount of telephone line repair work to do here this spring, after which the canoes had to be painted, the

motors overhauled, the fire pumps and hose tested, and the camps painted.

This year an addition was built to the patrolman's camp near the headquarters camp at St. Pamphile. An open fire danger station was established at the chief warden camp. The reports from this station are radioed to Augusta daily and relayed to Boston.

The old pick-up truck was replaced this year with a new Jeep in which a mobile radio set was installed. A Handie-talkie portable set was put into the tower at Depot Mt. While this little set is not entirely satisfactory, it will do until a more powerful unit is established on the mountain.

This year, shingle stain was put on the new storehouse built last summer and the floor of the storehouse and office were painted. New racks and shelves were added in anticipation of new equipment to arrive next year.

In early summer the chief warden, who had been with the department for several years, handed in his resignation. All regretted to see John Sinclair leave the job but could easily appreciate his main reason. His son David was of school age without any chance of getting an education in English in that locality. Only French is spoken up there and no English is taught.

Harold Pelletier replaced him, having worked in that district for several years and was familiar with all angles of the job.

1952

After the annual warden training school at Presque Isle in April, the chief warden and 2 patrolmen started work on telephone lines which were in bad condition after the severe snow and wind storms of the past winter. It was necessary to replace considerable wire, insulators, and some poles on all lines, especially the Seven Islands line.

As soon as possible after the usual work on canoes, motors, and hose testing the wardens got busy on the repair job to be done on the watchman's camp at Depot Mt. The camp was jacked up, new sills put in, and set back on a nice rock foundation. A new porch was built and the entire camp painted. It is in good condition now for many years.

Another year a new 10 H.P. outboard Johnson motor will be needed for the large 25-foot canoe which is used for toting supplies and equipment up the St. John River from Allagash. A new pick-up truck with radio unit is needed to replace the old truck that has been used here this year.

A new Type A power pump and 1,500 feet of 1" linen hose was received this year as well as 1,500 feet of 1½" linen hose for the larger pumps. Two new Type N pumps will be needed to replace the two old pumps by next year.

General

During the fire season of 1951 there were fewer fires to contend with than in some years. The precipitation was more than usual and spread over the entire season with no more than a week at a time of warm, drying weather. However, the season of 1952 was of strong contrast to the past one. Very little rain fell during the spring from the middle of March to the middle of May, but it was not needed as the heavy fall of snow last winter did not disappear until May. From the middle of May until the latter part of June spring rains came in abundance. During the month of June there was over six inches of rainfall. The weather cleared the 28th of June with moderately strong, warm winds that lasted off and on for nearly a week and ended with a terrific lightning storm. This storm started before noon and lasted until into the night with plenty of severe lightning but very little rain. It seemed to mark the beginning of a season that was to be very dry. Many lightning storms occurred the rest of the summer with little or no rain. It was necessary to keep the men within easy calling distance all summer to send periodically on lightning fires. As is so often the case, these fires were mostly in the hard to reach areas where it was next to impossible to move heavy equipment. The small portable Type A power pump, with 1" linen hose, in every district, is ideal for these fires where only a skeleton force is available.

There were 31 fires of all causes in the northern zone this year with a total acreage burned of less than 1,500 acres. The fire on T. 17, R. 11 and the one on T. 7, R. 15 accounted for about 1,400 acres. Considering the inaccessibility in getting a crew and supplies to most of the fires, it would appear that the men in all districts were alert. The Upper St. John district had the smallest acreage burned for the number of fires that required temporary labor. The only district without a fire reported was the Seven Islands district. That is quite unusual for a season as dry as the past one.

There is still a growing need for more protection in two districts as was recommended in the biennial report for 1950. The tower at Soper Mt. should be manned each year during the season

for lightning fires. This mountain is located in an area that has more lightning fires every year than all other districts in the northern zone combined. In hazy weather there are no towers that can cover this part of the Chamberlain district and the plane is often busy on missions elsewhere. A patrolman should be located on one of the Musquacook Lakes. This chain of five lakes is very much isolated from the chief warden's headquarters in this district. They cannot be reached by any road, trail, or stream nor is there any telephone line to this area. The only way to get there after a fire is reported is by plane. Planes are flying in to these lakes all during the summer with fishing parties and in the fall for hunting. It is just as necessary to spend money for this purpose as spending it for equipment that we cannot land there in time to prevent a conflagration. When the above recommendations and equipment replacements are taken care of the northern zone will be better organized and prepared for fighting forest fires.

Central Division—2,532,467 Acres

Robert E. Pendleton, Supervisor

The 1951 season was a good fire year in that rains were frequent and heavy. Only two short periods, one in the spring and another in October, did it dry out enough to create hazardous fire conditions. As a result, the fire occurrence, as well as damage and suppression costs, were all relatively low. In comparison with 1951, the season of 1952 was nearly the opposite. Fires started early in the spring, slacked off for a rainy spell in May and early June, and then continued during a dry and hazardous period until snow fell. After the first of July no shower or rain had enough moisture to overcome the dry soil conditions so that fires started readily and fire fighting went into long patrol periods, with fire damage and expenses mounting fast.

The following is a list of the fires which occurred in the Central Division during 1951-52, by cause and acreage burned:

Cause	Number		Acreage	
	1951	1952	1951	1952
Camp Fires	6	19	.80	2.30
Smoking	9	21	14.50	287.80
Debris Burning	6	5	9.50	.95
Lightning	5	71	—	354.72
Miscellaneous	3	7	1.50	6.15
Incendiary	2	2	—	3.00
Totals	31	125	26.30	654.90

The number of lightning fires in 1952 was abnormally high, running better than 50% of the total. Yet, lightning storms were no more numerous or severe than many other summers. However, the extreme dry conditions of the forest cover and the small amount of rain in the storms combined to make conditions right so that many of the lightning hits resulted in fires. As usual these fires were most numerous in the western part of the division in the more inaccessible and rougher terrain of the country. Realizing that the soil conditions were so dry, it was tried, wherever possible, to get water to the fires with power pumpers to cut down as much as possible the long periods of patrol. In this work it was found that the new light weight pumper and the 1″ hose were a great help. Not only did it take less men, but they were not so heavily burdened down and arrived on the fires in better shape. In connection with this same type of fire, the use of the portable radio on the ground and the radio-equipped planes were so great an aid that one cannot but wonder how the department ever got along without them.

This past season of 1952, when water was not to be found near some of the fires, several tank trucks were used and on a couple of occasions they were all that saved the fire from getting out of control. These tank trucks are a valuable piece of fire fighting equipment, more so now that there are so many gravel roads into the woods. They are so expensive as to be impractical for the department to own, but it is believed that all the larger trucks should be equipped with slip-on tanks ready for use if and when needed. Another possibility is for the department to own some tanks and depend upon hiring flat bed trucks to carry them. There are plenty of such trucks around the woods but tanks are scarce except near the potato farming areas.

The division has operated with nearly the same personnel during the past two years. Emery Grant, of Millinocket, took over the Katahdin district as chief warden at the opening of the 1951 season. The following men reached retirement age during the past two years:

Roman Rossignal, Patrolman—Aroostook Waters District
Charles Moore, Patrolman—Number Nine District
James McGibney, Watchman—East Branch District
Philip Berger, Watchman—Mattawamkeag District

Lost by death were:

Myron Byron, Patrolman—Number Nine District
Nicolas Tzovarras, Watchman—East Branch District

The placement of the men during the past two years remained the same. However, there will be some changes in 1953 to place men in a position to give better protection to areas being opened up by the woods operators and in areas where present woods traffic demands closer patrol.

The many different type buildings in the division, with the exception of one district, are in pretty good shape and the normal amount of repairs and replacements should keep them so. Fire equipment has been added each year but still needs some bolstering. This past summer it was found that some of the older equipment was not as sound as it appeared, for some of the old Type N pumpers gave out under the long pumping periods experienced. These must be replaced and additional pumps should be added in some districts. Due to excessive use this past season, a great deal of hose is in poor shape. This also must be replaced and more should be added to bring the total up to what the pumpers are capable of handling.

One of the most noteworthy accomplishments of the department during the past two years was the acquisition of the radio. Probably no other means of increasing the effectiveness of the personnel in their work could take the place of the two-way radio. During 1951 and 1952 all but 3 of the trucks in the division were equipped with radio. It is hoped that in 1953 2 more trucks can be radio-equipped so that all patrol trucks will then be radio controlled. The 2 patrolmen who were operating trucks not so equipped this past season were not as useful to their chief warden or to the Service as a whole. During 1952 some towers were equipped with pack set radio and there are 3 more which would be better towers for having radios installed.

The cooperation of the department men within and between the different districts remains excellent. There has been excellent cooperation between industries, landowner men, and other state department men. In fact, it was only through the cooperative efforts of all wood users that the 1952 fires were efficiently handled and finally extinguished.

IMPROVEMENTS

Katahdin District

Built a new log camp for the Ragged Mt. watchman.
Repaired and reroofed the Trout Mt. watchman's camp.
Painted the storehouse and the chief warden camp at Millinocket.
Painted the patrolman's camp at Togue Pond.

Mattawamkeag District

Reroofed Stacyville storehouse and put in new sills and posts.
Reroofed the Mattawamkeag Lake patrol camp and the Lawler Hill watchman's camp.
Painted the Whetstone Falls patrol camp and Lawler Hill camp.
Put in 9 miles of wire on the Slewgundy Road, making a complete metallic circuit from the chief warden headquarters to the telephone central at Sherman Mills.

East Branch District

Reroofed the watchmen camps at Burnt Mt. and Mt. Chase.
Shingled and painted the Horse Mt. watchman's camp on Mattagamon Lake.
Installed an open type fire danger station at Camp Colby.
Cut down part of the patrol camp at Hay Lake and practically rebuilt the remainder. This was a CCC barracks and was going to pieces.
Moved the metal garage from Hay Lake to Camp Colby.
Cut 1,000 feet of logs and had them sawn for repair work throughout the division.
Built a dock at Hay Lake so that planes can be serviced there.
Built a woodshed for Burnt Mt. watchman at McCarty Field.

Number Nine District

Built a patrolman's camp at St. Croix Lake where we formerly rented one.
Painted steel on Number Nine tower.
Moved a garage from Mitchell Mt. to the P.D. road near Number Nine watchman's camp.
Put new sills and posts under the boathouse at St. Croix Lake and under Howe Brook watchman's camp.

Aroostook Waters District

Built a camp for the chief warden at Ashland.
Replaced the old log camp at Squa Pan Mt. with a frame building.
Built from salvaged lumber a 20' x 20' storehouse at 25 Mile.
Replaced the 20' pole tower at Horseshoe Mt. with a 60' steel one.
Installed an open type fire danger station at 25 Mile.
Put new sills under the boathouse at Squa Pan Lake.

Fish River District

Built a camp for the chief warden at Portage.
Reposted the storehouse and made considerable repairs to same.

Western Division—3,525,714 Acres

Robert G. Hutton, Supervisor

Weather

Fires during 1951 totalled 37. Compared with previous records, this was a low for the Western Division. The season opened with a high ground moisture content. Rainfall was well distributed and in excess of the 37 year average. It was a good fire year.

Although the snowfall was above normal during the winter of 1952, there was little frost in the ground which caused a light spring run-off. Spring precipitation was light and burning indexes soared up to 100 during May. From the first of April to the first of November, rainfall was 4.88 inches below the 37 year aver-

age. It may be noted from the table below that particularly light precipitation took place during July and August which was 5.39 inches below normal for these 2 months. Ground conditions worsened and the burning indexes mounted during this period.

PRECIPITATION TABLE—From Recordings taken at Greenville
(Shown in inches)

	1951	1952	37 year average
April	5.70	2.23	2.92
May	3.83	3.79	3.22
June	2.05	5.05	3.72
July	6.33	.92	4.26
August	4.90	1.32	3.37
September	2.29	3.12	3.75
October	3.62	3.49	3.56
Totals	28.72	19.92	24.80

General Fire Situation

Pulp and log cuttings have been heavy during recent years, creating extensive slash areas. The bronze birch borer has left in its wake a trail of dead white and yellow birch stubs which are vulnerable to lightning strikes and are also the cause of dangerous spot fires. The above conditions, together with high winds, accounted for many of our larger fires during the summer of 1952.

Lightning storms were frequent, intense, and each one started many fires, many of which were located high up on mountain tops and scattered over wide areas. 38 of the 57 fires occurring during July and August were from lightning. From July 5th on, a general blow-up took place and on July 18 the Governor declared a woods ban on smoking and building out-of-door fires.

During July and August there were 7 major fires as listed below showing date and approximate acreage burned:

Date	Location	Acreage
July 5	Campbell Brook, T. 6, R. 15 and 16 and T. 7, R. 16	2,400
July 15	Poland Pond, T. 7, R. 14 and 15	106
July 17	Alder Brook	1,200
July 24	Little Kineo Mt., Day's Academy Grant	92
July 26	Pierce Pond	1,500
July 31	Misery Twp.	150
August 4	Little Spencer Mt., East Middlesex Grant	700

For the past five years fire equipment purchases for the Western Division have been seemingly heavy. However, with such an emergency arising as we had the past season, these were justified. Industry has built up a large inventory of fire equipment in the eastern part of the division. This, together with that

of the district, and some sent up from Augusta, was needed to suppress the above fires. When the Little Spencer Mt. fire broke, our resources were pretty well spread out. However, sufficient equipment was secured to do the job.

It was deemed necessary to hold the Rangeley fire unit intact in that area in order to have something with which to work in case a serious outbreak occurred in the western part of the state. That section does not have the privately-owned backlog of equipment that other areas have in the division.

Suppression of these fires involved the use of over 2,200 fire fighters, 24 bulldozers, 9 tractors, 58 fire pumps, 121,000 feet of 1½" fire hose, several hundred back pumps and hand tools, together with kitchen and feeding equipment and several thousand blankets.

The fire bosses for these jobs were selected from the best trained personnel in the division, all of whom have received specialized training in the large fire organization set-up. All divisional key personnel have attended either the Northeastern Forest Fire Protection Commission schools, which have been held the last two years in New Hampshire, or state seasonal warden schools held each spring.

The need for key personnel became so great that Forest Service men from all parts of the state were moved into the critical areas and assigned to positions for which they were best fitted. Industry contributed trained foresters, foremen, and others so badly needed in the ranks of a large fire organization.

During July and August, so many lightning fires were being reported daily that it was necessary to place small crews of specially trained men on a stand-by basis to hit these fires as rapidly as possible. Of the 38 fires started by lightning, all were suppressed except 3 which were not seen after they were first reported.

Air Activities

Airplanes continued to play an important part in fire suppression work. During the 1952 flare-ups, the need for planes was greater than could be taken care of by the 2 owned by the District.

Commissioner Roland H. Cobb, of the Department of Inland Fisheries and Game, very generously turned its 6 planes over to the department for fire work during the emergency. These had previously been equipped with Maine Forestry District radios

which tied them in with our communication system. The warden-pilots flew long hours and contributed a great deal toward the success of extinguishing these fires as did our own pilots. They did a splendid job. When needed, additional planes were also hired from private operators.

Probably the biggest air job ever undertaken in the history of the Maine Forestry District was that of moving all the fire fighters, equipment, and supplies to the Poland Pond fire. This required a fleet of 8 planes. The fire crew was supplied entirely by air for the duration of the job and the cost of the operation was less than overland transportation would have been.

Foot scouting of a fire is slow and limited. Sketching a going fire from a plane also has limitations. With this in mind, aerial photographs of the Little Spencer Mt. fire were taken from an altitude of 10,000 feet by warden-pilots Robert Bacon and George Later during its early stages. A workable mosaic was made from the photographs and this was used during the entire operation as the master map. It was kept up to date, day by day, showing the progress of the suppression work, break-throughs, spot fires, etc. It was of inestimable value in setting up the organization.

Several small parachutes were purchased two years ago. Before these could be put into use it was necessary to know about their value for air drops. Experimental drops were made to determine maximum loads, cargo breakage, proper dropping altitudes, wind drift, accuracy, etc. The men were given instruction in the techniques of dropping and chute packing. These have been used to an advantage in supplying fire crews working in remote areas and also to supply some of our remote lookout watchmen where transportation of supplies is a problem.

Training

Western division wardens attended training schools at Rumford, Skowhegan, Ellsworth, Millinocket, and Presque Isle, and at Lac Frontiere, Quebec, in 1951. Large fire organization and other subjects pertaining to their work were taken up. The New Brunswick Forest Service sent Herbert Johnson, their chief linesman, to instruct the wardens in the maintenance and techniques of woods telephone lines. His instruction was very well presented.

During the 1951 season students from four high schools were given instruction in fire prevention and suppression by western division men. The busy fire season of 1952 prevented the continuance of this work for the summer.

The Great Northern Paper Company and the S. D. Warren Company have asked the Maine Forestry District to conduct training schools another year for their men in the camps. This sort of training will have merit as it will bring about better coordinated effort between industry and state personnel.

Weather Stations

Prior to 1951 the division had operated 4 fire danger weather stations at Chesuncook Dam, Caratunk, Eustis, and at Cupsuptic. As these were located too far apart to contribute sufficient data for more localized weather predictions, it was deemed necessary to add 3 additional stations, 1 at Moose River, 1 at Pittston Farm, and 1 at Albany.

Roadside fire danger class day signs have been erected on Route 15, entering Greenville, and on Route 201, entering Caratunk. Much interest has been shown by the travelling public in these signs. They indicate what the local fire conditions are in the woods each day.

Communications

Western division communications have been greatly improved the past two years. Besides the 605 miles of telephone lines which are maintained by western division personnel, several new radios of different types have been added to those in operation at the beginning of the 1951 fire season. Fires can now be reported by radio from Big Squaw, Bigelow, Barren, Wadleigh, Number 4, Little Russell, Boundary Bald, Kibby, and Old Spec lookout stations. Big Squaw and Bigelow are equipped with strong 12-watt sets which have wide coverage. The batteries for these are charged by gas motor driven generators or by wind chargers. The remaining 7 are equipped with pack sets powered by ¾-watt dry cell batteries. These are kept open only when reporting in on the hour or when reporting a fire to the dispatcher's headquarters.

All 7 of the chief warden's trucks, as well as 5 patrolmen's trucks, are now equipped with 10-watt mobile sets. Each district headquarters has a Handie-talkie for fire use.

The terrain in the western part of the state is so mountainous that it does not lend itself too good for radio communication. For this reason a 10-watt office set was installed at the Rangeley district headquarters at Cupsuptic.

With the number of radios now operating in the division it is possible to communicate, either directly or by relay, and assures complete coverage.

During the operation of suppression activities on large fires this past summer, radios proved their worth. Fire organizations were run, in most cases, by radio communication alone. Crews were shifted from one sector to another and bulldozers were dispatched to hot spots or break-throughs by the rapid communication of radios. They were time saving, convenient, and most effective in this type of work.

Personnel

There were no chief warden changes during the past two years. However, the watchman and patrolman turn-over was greater than usual due to higher wages being paid elsewhere. Recruiting local men to fill these vacancies was made more difficult on account of two large construction jobs going on in the area.

Homer Silsby, former Moosehead Lake patrolman, who retired at the end of the 1950 season, died October 25, 1951.

Floyd Kimball, patrolman on Richardson Lakes, was fatally shot by another hunter on November 5, 1952.

Fire Plans

In the past, fire plans were set up on a divisional basis, but last year each chief warden made up a plan for his district showing the location of all the fire equipment and manpower within his area. These were consolidated into a division fire plan which was of great value at the time of the larger fires during the past season.

Slash Disposal

During the past biennium there were 4 large slash disposal jobs carried out in the division. 8 miles of high tension power line right-of-way slash was disposed of along the West Branch of the Penobscot River by the Great Northern Paper Company. The Central Maine Power Company cut and burned about 800 acres of flowage on their Indian Pond dam construction flowage in 1952. There were also about 8 miles of access road and power line slash disposed of from Moxie Lake to the new dam site. About 300 acres left on the Dead River flowage were cut and burned this year. This work was accomplished with no losses from fire.

DIVISION IMPROVEMENTS

Rangeley District

Built small storage shed at foot of Saddleback Mt.

Built 10 miles grounded circuit telephone line in cooperation with the Kennebec Pulp & Paper Company.

Reroofed one lunch ground shelter.

Set 3 new telephone poles on Kennebago line and 1 new pole on Wilson Mills line.

Built new cab on West Kennebago Mt. tower.

Cut 26 telephone poles and hauled them to Upton.

Tore down a set of pulp camps and salvaged 4,000 feet of lumber.

Salvaged 10 spruce logs for Upton storehouse sills.

Dismantled camp on Cupsuptic River, salvaged 2 hot water tanks, considerable galvanized water pipe, and 14 double sashes.

Resilled part of the Aziscoos cabin.

Laid new floor in back part of the Aziscoos Mt. camp.

Refloored Aziscoos Mt. cab.

Painted Pine Island patrolman's camp.

Established fire danger station at Upton. This was relocated at Albany during 1952.

Dismantled part of the Songo schoolhouse, shingled the roof with asphalt shingles, and renovated the interior for a dwelling for our patrolman. Cleaned brush from lot.

Built combination two-car garage and storehouse at patrolman's headquarters at Albany.

Salvaged spruce logs and had them sawed into 800 feet of lumber.

Went over the 268 miles of telephone lines in the district which were in bad shape as the result of heavy winds of the previous fall.

Insulated Old Spec Mt. tower cab.

Moosehead District

Erected steel and built new tower cab on Barren Mt.

Finished Barren Mt. camp, inside cupboards, and shutters.

Built shutters for the above tower.

Converted 2½ miles of the Squaw Mt. trail to a Jeep road.

Built 3 new bridges on Squaw Mt. road.

Insulated Squaw Mt. tower with paper and drop siding.

Painted the cab of Squaw Mt. tower.

Built 4 miles of Jeep trail to Wadleigh Mt. lookout station.

Built new cab on the Wadleigh Mt. tower and completely painted it.

Built shutters for the Wadleigh tower.

Made repairs on the Number 4 Mt. tower cab.

Built shutters for Number 4 Mt. tower.

Cut ¼ mile of new trail to get around beaver flowage—traversable by Jeep.

Built small building to house fire unit at Elliottsville.

Laid ½ mile temporary submarine cable at Kineo Mt.

Following year laid 1 and ⅝ miles of permanent submarine cable at Kineo. The New England Tel. & Tel. Company furnished the cable and we furnished the labor.

Built 6 cement fireplaces at Squaw Brook campgrounds. Also painted tables and inside of toilet and cut and burned brush around the site.

Built timbered crib along waterfront of Greenville storehouse lot to prevent erosion. This will afford additional parking space.

Did considerable work on the district telephone lines, such as brushing and repairs.

Chesuncook District

Erected a 100′ hose drying rack.

Laid a new matched floor in the Soubunge Mt. watchman's camp and painted same.

Insulated Soubunge Mt. tower cab with paper and siding and painted same.
Made shutters for above tower cab.
Built woodshed at Soubunge Mt. camp.
Cut right-of-way from main road to the Soubunge Mt. camp and have it partly gravelled.
Laid new matched pine floor and repaired the interior of the Spencer Mt. watchman's camp.
Laid a double floor in the tower cab and made shutters for same.
Built a woodshed for the Spencer Mt. watchman's camp.
Brushed and made major repairs on 17½ miles of telephone line.
Painted the Chesuncook Dam patrolman's camp.
Built 1 field desk and 1 wangan box for fire use.
Reroofed 1 lunchground shelter at Frost Pond.
Reroofed 1 lunchground shelter on Grant Farm road.
Painted weather fire danger station and boat.
Burned old pulp camp and cleaned up the area on the Sourdnahunk road.

Moose River District

Made repairs on the Boundary Bald Mt. tower and cables.
Shingled the Williams Mt. tower cab roof.
Brushed 21 miles of telephone line.
Built a new watchman's camp, 14′ x 18′ on Boundary Bald Mt. and painted same.
Re-covered a 20′ canoe.

Seboomook District

Laid a top floor in the Canada Falls patrolman's camp, as well as putting up cupboards and sideboards.
Screened in the porch.
Brushed 4 miles of mountain trails and telephone line.
Made repairs on inboard motor boat.
Built concrete fireplaces: 1 at Lane Brook, 2 at Canada Falls Dam, 2 at Seboomook Dam, and 1 at Lost Pond.
Cleared and graded headquarter's lot at the Pittston Farm for new house and storehouse.
Dug a well on the above lot.
Painted the inside and put new window stools in the Little Russell Mt. tower cab; also laid a new floor and reshingled the roof.
Built a new 5-room house, finished inside, hot and cold running water, with bathroom, and painted same inside and out; size 20′ x 30′.
Built a concrete septic tank.
Installed pump and motor and built house for same for water supply.
Built a temporary equipment house for use until the permanent storehouse can be erected.
Cut 16,190 feet of pine logs, hauled to the mill, and had them sawed into lumber for the new storehouse. This will be 26′ x 35′ and built during the 1953 season.
Tore down old camp at Seboomook Dam headquarters.
Moved the patrolman's camp to a new site and built on a porch.
Erected new pole lines from road to camps at Green Mt. and Little Russell Mt.

Parlin Pond District

Brushed all telephone lines, 50 miles.
Did some gravelling on the Kelley Mt. road.
Picked up about 5 miles of telephone wire and insulators on the old Kingsbury-Brighton line. This was discontinued.
Destroyed 2 old sets of lumber camps which were a fire hazard.
Cut and yarded, ready to haul to the mill next spring, 7,070 feet of hemlock logs. These are to be used for the frame of the new Seboomook district storehouse to be built in 1953.
Completed the construction of the Kelley Mt. watchman's camp.
Relocated and cut new trail on Kelley Mt.

Put new asphalt shingle roof on the Moxie Bald Mt. camp and tower.
Gravelled and replaced culverts on the Coburn Mt. road to the garage.
Graded the grounds and seeded for a lawn at the Caratunk storehouse lot.
Built a cement grease pit at the Caratunk storehouse.
Built a woodshed at the Kelley Mt. watchman's camp.
Replaced 40 new telephone poles on the Moxie Bald telephone line.
Built a new concrete fireplace at the Caratunk lunchground.

Dead River District

Painted tower cabs on Snow Mt., Mt. Bigelow, and Mt. Abram.
Painted the inside of the Eustis storehouse.
Constructed a hose dryer.
Built and finished off rooms in storehouse.
Wired storehouse for electric lights.
Built enclosure for weather station.
Painted oil house.
Put water line into new house.
Built a new 5-room house for the chief warden. It is finished off inside and is complete with hot and cold running water, and bathroom. The size is 20′ x 30′.
Built a concrete septic tank.
Put water line into storehouse.
Insulated Bigelow Mt. and Snow Mt. with paper and novelty siding on outside.
Put new logs under the Mt. Abram camp.
Painted metal roof on the Kingfield storehouse.
Replaced roofs and built concrete fireplaces of all lunch shelters.
Did some work on the Carrabasset-Dead River road, thus shortening the distance by truck by 60 miles.
Moved and repaired oil house at Eustis.
Destroyed and cleaned up old buildings at the Chain-of-Ponds farm and salvaged some of the lumber.
Built 2 lunch shelters, tables, and fireplaces at above site.
Took down old fence at Eustis storehouse lot, replacing it with young spruce trees.
Graded lawn and reseeded same.
Built side boxes for 2 trucks.
Built public float at Chain-of-Ponds lunchground.
Constructed a metallic telephone line from the end of the pole line to the watchman's camp on Snow Mt., a distance of 1 mile.
Cut and hauled 93 cedar telephone poles for the Snow Mt. line.
Built a new hose shelf and 1 new pumper box.
Cut logs and had sawed 2,700 feet of pine to have on hand for general use.
Painted weather enclosure and oil house.
Built complete 4.3 miles of new pole line on the Snow Mt. road.
Tightened guys, installed new turnbuckles, painted steel and cab of Snow Mt. tower.
Built railing around Bigelow Mt. camp.
Built cellar there to store the radio batteries and food during the winter months.
Painted floor and camp of Mt. Bigelow.
Laid linoleum and installed new telephone there.
Shingled porch, painted camp inside, built screens, and cut a cord of stove wood for watchman's use on Mt. Abram. Mowed and widened the trail.
These improvements were made by the western division personnel. No outside labor was used in the construction of the 2 chief warden's houses.

Eastern Division—1,962,926 Acres

George A. Faulkner, Supervisor

The past two fire seasons, 1951 and 1952, were different in nature. After a light snowfall during the winter of 1951, early in

April it began to look as if trouble was coming. This condition continued until about the middle of May when intermittent rains came and continued throughout the entire season. As a result of this, only 25 fires occurred, which is unusual for the eastern division.

During the winter of 1952 there were 2 heavy snowstorms that were light in nature. Early in April this snow cover disappeared very quickly. However, small rains kept coming until the middle of June when a real drought set in which continued until the latter part of August. Lack of rain during this period, plus heavy lightning storms and pulp operations, created a serious forest fire hazard. 90% of the total number of fires of 75 or 80 occurred during this period, of which 3 were of major proportions; namely, the Clifford Lake fire, the DeBlois fire, and the T. 34-35, M.D. fire. These 3 fires started as a result of pulp operations, each at the western side with a strong west wind blowing which made quick control impossible. As weather conditions changed the men were able to get around the fires and bring them under control. With many other fires going at the same time, all available equipment and manpower were in use. However, rains finally came and kept the fire danger down for the rest of the season.

With a favorable September and October, much needed repair work and new improvements were accomplished. During the past two fire seasons new tower cabs were erected on Schoodic Mt., Dill Ridge, Passadumkeag Mt., and Musquash Mt. New camps were built at Passadumkeag Mt. and Howland. Improvements were also made at Musquash Mt., Princeton storehouse, Grand Lakes Stream boathouse, Pocomoonshine Mt., Washington Bald Mt., Peaked Mt., Main River camp, Cooper camp, Dill Ridge camp, Fifth Lake camp, Third Lake Dam camp, and Mattamiscontis camp. At Beddington a new storehouse, 24′ x 36′, with a cement cellar, was constructed and a headquarters for the Narraguagus-Union River district established.

A new telephone line from Mattamiscontis Mt. to the new Howland camp was built. This will give telephone connection from the Brownville headquarters to the patrolman at Howland. One major problem was the rebuilding of 27 miles of telephone line from Columbia central to Main River camp in the Machias district. It is beginning to look as if this telephone line will be of real value in the future as more and more telephone systems are going on a dial basis. A new single line was built between the Prairie and

Brownville storehouse and improving the past service to Mattamiscontis Mt. A new pole line was constructed between Lambert Lake and Pirate Hill. As in the past, many new poles were set up as replacements. At present the entire telephone system is in the best condition for a number of years.

At the present time each district in the division has 1 Jeep, 4-wheel drive, along with the pick-up trucks. One new long wheel base and half ton Ford was added that are in use wherever needed. All cars prior to 1947 have been traded for new ones and the policy should continue by trading in the older cars for the new ones.

More radios were added during the past 2 years so at present 12 Jeeps or pick-ups have been equipped. Each district has 1 Handie-talkie. Pack sets have been placed on White Cap, Mattamiscontis, Musquash, Lead, and Schoodic towers that tie in very closely with the 3 land stations at Medford, Cooper, and Blue Hill. Plans are being made to have more radios in cars and more pack sets at lookout stations. As each new radio is put in use, it has greatly improved the communication system for the eastern division.

A new weather station was placed at Dill Ridge the past season which covers the area between Medford and Topsfield. The eastern section of the state is now well covered by stations and it is interesting to note the variation of the readings.

The problem of maintaining camp sites has always been a difficult one. This past season the State Highway Department began to take over a few which were formerly maintained by this department, and their road patrolmen kept them in order. This has been a great help to our wardens.

During the past two seasons more replacements of personnel have taken place than for a long time. 1 chief warden was needed, 3 new patrolmen, and 7 new watchmen. This creates rather a disturbing factor as far as the watchmen are concerned. New watchmen must learn their territory as the maps are not the best. Now that the eastern division is practically covered by USGS sheets and wardens have become familiar with them and depend on them, I would suggest that the tower map system be changed so that the base map will be made up with USGS sheets. I think this would help a great deal to improve the method of locating fires.

In closing this report, we must all realize that seasonal weather has been changing along the coast for the past several years, and that men of the department must go to work earlier in the spring and stay on later in the fall. I hope in the near future that at least all chief wardens will be on a yearly payroll which should greatly improve the forest fire problem.

Airplanes

Earl F. Crabb, Chief Pilot

Without minimizing any one of the important factors of a well organized forest protection and fire suppression system, the airplane must be recognized as a highly effective tool for fire protection, aerial reconnaissance, supplementary detection, and aerial supply. The Maine Forest Service has long recognized the airplane's potentialities and continues to exploit it as a supplement to its forest fire protection and suppression system.

In the spring of 1951, the Luscombe plane, which was based in the northern division, was traded in for a 2-place Aeronca of 90 horsepower. This has proved to be an excellent performing airplane and very reliable. Its performance and reliability are due in no small part to the fact that it has been flown by the same pilot, Charles Coe, who has been with the department since 1949.

The other department plane, the Republic Seabee, though purchased in 1946, was retained because of its load-carrying ability and reliability. Both planes saw heavy service, particularly in the summer and fall of 1952.

During the latter part of 1952, plans were made to trade the Republic Seabee. After an intensive study of current models available, it was decided that a Cessna 170, all metal, 4-place airplane, fitted with pontoons, best suited the department's needs for an all around utility plane.

Some changes made in radio installation in the department's aircraft have resulted in a marked improvement and now give complete coverage of the department's radio communications throughout the state.

The department will continue to keep informed on the latest experiments and developments in the use of aircraft for forest fire protection.

BUDGET AND OPERATING STATEMENT—MAINE FORESTRY DISTRICT
January 1, 1951 to December 31, 1951

	Budget	Total Expenditures	Augusta Office and Planes	Northern (Gilpatrick)	Central (Pendleton)	Eastern (Faulkner)	Western (Hutton)	Radio
Office Salaries	—	$11,727.34	$11,727.34	—	—	—	—	—
Supervisors	—	18,524.10	—	$4,592.30	$4,476.60	$4,837.20	$4,618.00	—
Chief Wardens	—	48,567.08	—	10,493.13	13,454.44	11,370.45	13,249.06	—
Watchmen	—	72,422.07	—	7,451.05	24,137.91	14,898.24	25,934.87	—
Patrolmen	—	84,154.16	—	22,251.38	18,687.83	16,648.65	26,566.30	—
Weather Station & Tel. Operators	—	5,407.60	—	1,375.00	1,647.10	748.00	1,637.50	—
Pilots	—	6,291.00	6,291.00	—	—	—	—	—
	262,041.00	247,093.35	18,018.34	46,162.86	62,403.88	48,502.54	72,005.73	
Plane Rentals	2,000.00	533.18	—	—	134.66	8.00	390.52	—
Plane Operation	5,000.00	4,791.20	4,791.20	—	—	—	—	—
Fire Suppression	52,000.00	7,690.06	—	810.27	1,339.87	1,177.30	4,362.62	—
Traveling Expense	4,900.00	6,771.68	1,363.67	1,317.07	1,475.46	753.87	1,690.58	171.03
Car and Truck Operation	26,150.00	26,462.95	588.79	5,727.33	5,472.77	5,983.47	8,673.53	17.06
Utility Service	4,550.00	4,057.60	—	296.36	1,165.28	697.21	1,898.75	—
Rents	800.00	592.24	200.00	4.14	157.00	3.00	228.10	—
Repairs	12,000.00	11,312.82	25.36	2,687.29	2,725.81	2,448.35	3,204.55	221.46
Insurance	2,400.00	2,680.82	191.13	281.43	795.55	719.10	693.61	—
General Operating Expense	2,400.00	3,682.01	3,103.14	117.75	202.40	45.75	211.85	1.12
Food (Tel. and Construction)	1,000.00	1,687.13	—	—	599.75	140.68	946.70	—
Fuel	200.00	239.17	—	69.23	100.63	—	69.31	—
Office Supplies	500.00	738.74	653.54	—	—	49.20	36.00	—
Other Supplies	6,500.00	6,657.49	515.95	2,487.28	1,485.07	878.44	1,242.92	47.83
Disability Awards	2,750.00	1,633.62	—	1,150.00	350.75	22.50	110.37	—
Buildings and Improvements	9,000.00	16,038.43	—	468.58	4,320.21	4,312.10	5,171.78	1,783.76
Equipment	63,000.00	102,406.49*	25,344.87	13,488.09	11,028.76	6,951.92	10,361.11	35,231.74
Land Purchases	250.00	125.00	—	—	—	25.00	100.00	—
Total	457,441.00	445,193.98	54,795.99	75,067.68	93,739.85	72,718.43	111,398.03	37,474.00

*Inventory of items purchased in 1951 for 1952 season:

60,000' Hose	21,900.00
21 Pacific Pumps	10,832.00
60 Blankets	400.00
2 Pumpers	500.00
42 Indian Pumps	550.00
	34,182.00

BUDGET AND OPERATING STATEMENT—MAINE FORESTRY DISTRICT

January 1, 1952 to December 31, 1952

	Budget	Total Expenditures	Augusta Office and Planes	Northern (Gilpatrick)	Central (Pendleton)	Eastern (Faulkner)	Western (Hutton)	Radio
Office Salaries	—	—	$12,701.79	—	—	—	—	—
Supervisors	—	—	—	$4,770.00	$4,942.00	$4,982.00	$4,942.00	—
Chief Wardens	—	—	—	11,054.25	14,539.50	12,285.00	14,330.60	—
Watchmen	—	—	—	9,405.46	25,057.80	15,792.34	25,452.07	—
Patrolmen	—	—	—	20,517.74	20,754.99	17,759.34	30,625.99	—
Weather Station and Tel. Operators	—	—	—	1,879.50	1,893.00	905.00	1,845.00	—
Pilots	—	—	$6,693.00	—	—	—	—	—
Keep Maine Green and Tree Farm	—	—	2,386.00	—	—	—	—	—
Total Personal Services	$278,543.00	$265,514.37	$21,780.79	$47,626.95	$67,187.29	$51,723.68	$77,195.66	
Plane Rentals	750.00	4,803.09	—	1,027.92	2,339.02	188.50	1,247.65	—
Plane Operation	2,000.00	4,204.79	4,204.79	—	—	—	—	—
Fire Suppression	50,000.00	*439,532.97	—	18,080.62	39,481.13	143,036.38	238,934.84	—
Traveling Expense	5,000.00	8,166.07	2,585.96	1,302.39	1,487.49	1,062.18	1,646.61	81.44
Car and Truck Operation	30,000.00	32,065.90	884.44	6,817.91	7,230.92	7,722.99	9,397.22	12.42
Utility Service	4,450.00	4,974.96	5.26	335.38	1,495.58	865.09	2,268.15	5.50
Rents	1,000.00	285.58	—	42.33	21.00	3.00	219.25	—
Repairs	13,000.00	17,578.94	474.55	2,948.43	2,961.90	2,455.23	5,035.57	3,703.26
Insurance	6,500.00	4,566.62	344.48	346.18	971.91	929.09	1,109.61	865.35
General Operating Expense	2,850.00	2,066.85	1,637.66	67.64	59.54	77.00	216.49	8.52
Food (Tel. and Construction)	2,100.00	911.27	—	—	255.86	322.76	306.05	26.60
Fuel	350.00	431.94	—	135.33	211.75	2.10	82.76	—
Office Supplies	700.00	584.04	427.77	48.22	11.53	12.48	84.04	—
Other Supplies	9,000.00	7,103.26	1,497.85	1,702.77	1,273.46	1,205.65	1,358.97	64.56
Disability Awards	2,750.00	3,125.58	—	592.00	1,741.01	51.85	740.72	—
Building and Improvements	15,000.00	7,365.28	—	304.55	3,932.22	1,980.94	1,142.18	5.39
Equipment	35,000.00	47,931.48	364.30	7,122.33	7,433.03	4,500.83	10,715.58	17,795.41
Land Purchases	500.00	100.00	—	—	100.00	—	—	—
Total	$459,493.00	$851,312.99	$34,207.85	$88,500.95	$138,194.64	$216,139.75	$351,701.35	$22,568.45
Paid in 1953		*108,130.04						
Paid in 1952		743,182.95						

1952 INVENTORY SUMMARY

	Augusta	Northern	Central	Eastern	Western	Total M.F.D.	Organized Towns (Field)	Organized Towns (Augusta)	Total State
1" Linen Hose	—	8,700′	3,800′	—	—	12,500′	—	—	12,500′
1½" Linen Hose	1,000′	32,850′	42,300′	50,200′	56,000′	182,350′	75,300′	1,250′	258,900′
1½" Rubber Lined Hose	—	50′	3,475′	2,500′	—	6,025′	74,175′	3,750′	83,950′
Power Pumps	—	22	23	24	39	108	75	3	186
Hand Pumps	—	391	427	676	414	1,908	1,289	25	3,222
Forestry Axes	—	276	409	241	510	1,436	459	48	1,943
Other Axes	—	74	363	139	242	818	400	13	1,231
Shovels	—	461	708	490	681	2,340	1,330	59	3,729
Trucks	—	17	20	21	23	81	36	3	120
Cars	1	1	—	1	1	4	—	—	4
Planes	2	—	—	—	—	2	—	—	2
Boats	—	10	9	8	11	38	—	—	38
Canoes	—	22	23	23	12	80	—	—	80
Outboard Motors	—	18	19	14	22	73	—	—	73
Radios—Mobile	1	8	13	14	13	49	32	5	86
Radios—Portable	—	8	10	11	13	42	61	—	103
Radios—Tower Set	—	2	2	1	3	8	4	2	14
Tel. Lines State-owned, Miles	—	484½	597	350	260	1,691½	37	—	1,728½
Tel. Lines Privately-owned, Miles	—	37	113	100	246	496	—	—	496

MAINE FORESTRY DISTRICT FIRE RECORD 1951

Location	Date	Acreage	Cause	Damage
Aroostook County				
T. A, R. 2, WELS	April 22	2	Brush or Debris Burning	$6.00
Molunkus	May 10	1	Brush or Debris Burning	5.00
Forkstown	May 14	.5	Brush or Debris Burning	2.00
Oxbow Pl.	May 14	5	Smokers	36.00
T. 15, R. 6, WELS	May 15	1.5	Miscellaneous	6.00
T. 16, R. 4, WELS	May 15	....	Smokers	......
Forkstown	May 19	4	Brush or Debris Burning	22.00
Forkstown	May 19	.5	Brush or Debris Burning	2.00
T. 14, R. 7, WELS	May 20	....	Campers	......
Glenwood Pl.	May 20	2	Brush or Debris Burning	6.00
Winterville Pl.	May 24	.2	Lumbering	1.00
T. 16, R. 7, WELS	June 16	2.5	Campers	1,123.00
T. 9, R. 5, WELS	June 22	....	Incendiary	......
Winterville Pl.	June 25	....	Lightning	......
T. 17, R. 10, WELS	July 24	....	Smokers	......
T. 11, R. 10, WELS	July 27	....	Lightning	......
T. 17, R. 5, WELS	Aug. 7	.4	Smokers	20.00
Winterville Pl.	Oct. 14	.1	Campers	......
T. 17, R. 11, WELS	Oct. 18	....	Incendiary	......
T. 17, R. 11, WELS	Oct. 18	....	Incendiary	......
T. 17, R. 11, WELS	Oct. 18	....	Incendiary	......
T. 17, R. 11, WELS	Oct. 18	....	Incendiary	......
T. 17, R. 11, WELS	Oct. 18	....	Incendiary	......
T. 17, R. 11, WELS	Oct. 18	....	Incendiary	......
T. 17, R. 11, WELS	Oct. 18	....	Incendiary	......
T. 17, R. 11, WELS	Oct. 18	....	Incendiary	......
T. 17, R. 11, WELS	Oct. 18	....	Incendiary	......
T. 17, R. 11, WELS	Oct. 18	....	Incendiary	......
T. 17, R. 11, WELS	Oct. 18	....	Incendiary	......
T. 17, R. 11, WELS	Oct. 18	....	Incendiary	......
T. 17, R. 11, WELS	Oct. 18	....	Incendiary	......
T. 17, R. 11, WELS	Oct. 18	....	Incendiary	......
T. 17, R. 11, WELS	Oct. 18	....	Incendiary	......
T. 17, R. 11, WELS	Oct. 18	....	Incendiary	......
T. 17, R. 11, WELS	Oct. 18	....	Incendiary	......
T. 17, R. 11, WELS	Oct. 18	....	Incendiary	......
T. 17, R. 11, WELS	Oct. 18	....	Incendiary	......
T. 17, R. 11, WELS	Oct. 18	....	Incendiary	......
T. 17, R. 11, WELS	Oct. 18	....	Incendiary	......
T. 17, R. 11, WELS	Oct. 18	....	Incendiary	......
T. 17, R. 11, WELS	Oct. 18	....	Incendiary	......
Franklin County				
Salem	April 24	.8	Miscellaneous	2.00
Dallas Pl.	May 5	20	Brush or Debris Burning	100.00
Salem	June 6	....	Smokers	......
Sandy River Pl.	July 11	9	Smokers	239.00
T. 3, R. 3, (Davis) WBKP	Oct. 16	2.5	Smokers	8.00
Hancock County				
T. 16, MD.	May 5	74	Campers	270.00
T. 22, MD.	June 6	.2	Incendiary	1.00
T. 3, ND	Oct. 22	.2	Incendiary	......
Oxford County				
Albany	May 5	19	Lumbering	65.00
Albany	May 8	3.5	Smokers	14.00
Albany	May 14	13	Lumbering	39.00
Oxbow	June 10	46	Smokers	6,970.00
Penobscot County				
Medway	April 28	2	Smokers	6.00
Indian Purchase No. 3	May 1	....	Miscellaneous	......
Medway	May 1	....	Smokers	......
Mattamiscontis	May 15	.5	Brush or Debris Burning	2.00
Mattamiscontis	May 15	20	Brush or Debris Burning	100.00
Mattamiscontis	May 15	60	Brush or Debris Burning	600.00
T. 6, R. 7, WELS	May 20	.5	Campers	2.00
T. 5, R. 8, WELS	June 5	....	Incendiary	......

MAINE FORESTRY DISTRICT FIRE RECORD 1951

Location	Date	Acreage	Cause	Damage
Penobscot County — Cont.				
Webster Pl.	June 10	.1	Brush or Debris Burning	.....
Indian Purchase No. 3	June 11	.8	Smokers	$2.00
T. 6, R. 7, WELS	June 13	.5	Smokers	4.00
T. 1, R. 7, WELS	June 17	5	Smokers	15.00
T. 2, R. 6, WELS	Oct. 16	1	Smokers	66.00
Piscataquis County				
Lakeview Pl.	May 1	18.2	Railroad	55.00
T. 4, R. 10, WELS	May 5	....	Campers	.....
Elliottsville Pl.	May 5	4	Campers	16.00
Orneville Twp.	May 6	2	Smokers	6.00
T. 3, R. 11, WELS	May 12	.2	Brush or Debris Burning	1.00
Orneville Twp.	May 20	1.5	Miscellaneous	6.00
T. 4, R. 9, NWP	May 21	.8	Smokers	8.00
T. 9, R. 9, WELS	May 22	....	Lightning	.....
T. 10, R. 11, WELS	June 21	1.2	Campers	7.00
T. 5, R. 15, WELS	June 21	.8	Smokers	6.00
T. A 2, R. 13 & 14	June 24	.2	Campers	2.00
T. 4, R. 12, WELS	July 5	....	Lightning	.....
T. 2, R. 9, WELS	July 11	....	Miscellaneous	.....
T. 10, R. 11, WELS	July 15	....	Lightning	.....
T. 9, R. 12, WELS	July 15	....	Lightning	.....
T. 8, R. 11, WELS	July 26	....	Lightning	.....
T. 2, R. 12, WELS	July 26	....	Lightning	.....
T. 4, R. 11, WELS	July 26	....	Lightning	.....
T. 5, R. 12, WELS	July 31	....	Lightning	.....
T. 9, R. 10, WELS	Aug. 1	....	Lightning	.....
T. 3, R. 14 & 15, WELS	Aug. 5	....	Miscellaneous	.....
T. 8, R. 10, WELS	Aug. 10	....	Lightning	.....
T. 3, R. 11, WELS	Sept. 4	....	Campers	.....
Somerset County				
Dennistown Pl.	May 13	1	Campers	2.00
Misery Gore	May 18	.5	Railroad	1.00
T. 5, R. 3, NBKP	June 2	....	Miscellaneous	.....
West Forks Pl.	June 4	3.4	Smokers	16.00
T. 3, R. 6, BKP, WKR (Upper Enchanted)	June 11	2.2	Smokers	27.00
T. 5, R. 19, WELS	June 20	.7	Smokers	6.00
The Forks Pl.	Aug. 2	....	Smokers	.....
T. 4, R. 6, BKP, WKR (Hobbstown)	Aug. 2	....	Campers	.....
Big W	Aug. 20	....	Lightning	.....
T. 4, R. 18, WELS	Sept. 8	....	Smokers	.....
Caratunk Pl.	Oct. 21	....	Smokers	.....
Flagstaff Pl.	Oct. 22	.1	Campers	.....
Washington County				
Pl. No. 14	April 27	1	Miscellaneous	3.00
Deblois	May 1	8	Incendiary	93.00
Trescott	May 2	10	Smokers	30.00
Pl. No. 18	May 4	2	Campers	6.00
Trescott	May 5	.2	Incendiary	1.00
T. 8, R. 3-T. 8, R. 4, NBPP	May 5	.2	Smokers	1.00
Trescott	May 5	.1	Smokers	....
Wesley	May 6	.1	Smokers	.....
Trescott	May 6	3.5	Incendiary	52.00
T. 36, MD.	May 9	6	Smokers	60.00
T. 18, ED	May 11	75	Incendiary	150.00
T. 18, ED	May 15	60	Incendiary	200.00
Lambert Lake (T. 1, R. 3 TS)	May 19	....	Railroad	.....
Wesley	May 20	....	Miscellaneous	.....
T. 18, ED	May 27	.5	Campers	1.00
T. 19, MD.	June 21	.5	Smokers	1.00
Trescott	Sept. 14	.5	Miscellaneous	1.00
Trescott	Sept. 30	....	Incendiary	.....

MAINE FORESTRY DISTRICT FIRE RECORD 1952

Location	Date	Acreage	Cause	Damage
Aroostook County				
Reed Pl.	April 26	2	Incendiary	$4.00
T. 11, R. 10, WELS	May 6	....	Brush or Debris Burning	.....
T. 17, R. 5, WELS	June 29	....	Smokers	.....
T. 7, R. 5, WELS	June 30	....	Smokers	.....
T. 17, R. 5, WELS	July 1	1	Lumbering	69.00
Winterville Pl.	July 3	.2	Lumbering	151.00
T. 15, R. 9, WELS	July 4	....	Campers	25.00
T. 13, R. 7, WELS	July 6	....	Campers	.....
T. 17, R. 11, WELS	July 7	1,250	Smokers	7,775.00
T. 16, R. 10, WELS	July 7	1	Campers	3.00
T. 11, R. 8, WELS	July 9	116	Smokers	19,508.00
T. 17, R. 5, WELS	July 9	....	Miscellaneous	.....
T. 15, R. 9, WELS	July 12	....	Lightning	.....
Winterville Pl.	July 12	....	Lightning	.....
T. 14, R. 8, WELS	July 12	....	Lightning	.....
Glenwood Pl.	July 12	.2	Lightning	.....
T. 14, R. 6, WELS	July 13	....	Campers	.....
T. 11, R. 10, WELS	July 13	.1	Lightning	1.00
T. 3, R. 3, WELS	July 13	.2	Lightning	1.00
Reed Pl.	July 13	....	Lightning	.....
T. 14, R. 8, WELS	July 14	....	Campers	.....
T. C, R. 2, WELS	July 14	....	Lightning	.....
T. 18, R. 12, WELS	July 15	76	Lightning	852.00
T. 15 & 16, R. 8, WELS	July 17	323	Lightning	13,651.00
T. 11, R. 9, WELS	July 20	....	Lightning	.....
T. 17, R. 4, WELS	July 23	....	Smokers	.....
T. 12, R. 8, WELS	July 24	....	Lightning	.....
T. 8, R. 5, WELS	July 27	....	Lightning	.....
T. 11, R. 12, WELS	July 27	....	Lightning	.....
T. 14, R. 7, WELS	July 28	....	Lightning	.....
T. D, R. 2, WELS	July 28	....	Lightning	.....
T. 7, R. 5, WELS	July 29	....	Lightning	.....
T. 7, R. 5, WELS	July 29	.5	Lightning	1.00
T. 17, R. 3, WELS	July 29	....	Lightning	.....
Glenwood Pl.	July 29	1	Miscellaneous	28.00
T. 3, R. 2, WELS	July 30	....	Smokers	.....
Macwahoc Pl.	July 31	....	Lightning	.....
Reed Pl.	July 31	....	Lightning	.....
T. 1, R. 5, WELS	Aug. 1	....	Lightning	.....
T. 2, R. 4, WELS	Aug. 1	80	Smokers	4,096.00
T. 3, R. 2, WELS	Aug. 1	.2	Lightning	1.00
Macwahoc Pl.	Aug. 1	.2	Lightning	1.00
T. 11, R. 13, WELS	Aug. 1	.5	Lightning	2.00
T. 1, R. 5, WELS	Aug. 1	.2	Lumbering	1.00
T. 9, R. 3, WELS	Aug. 4	1	Campers	2.00
Hammond Pl.	Aug. 9	.5	Lightning	2.00
T. 17, R. 5, WELS	Aug. 13	....	Smokers	.....
T. 10, R. 8, WELS	Aug. 19	.1	Lightning	22.00
T. 10, R. 8, WELS	Aug. 19	1.4	Lightning	76.00
T. 10, R. 7, WELS	Aug. 19	.2	Lightning	.....
T. 15, R. 9, WELS	Aug. 31	.2	Campers	1.00
T. 15, R. 9, WELS	Aug. 31	....	Campers	.....
T. 15, R. 9, WELS	Aug. 31	....	Campers	.....
T. 10, R. 11, WELS	Sept. 11	....	Lightning	.....
T. 11, R. 8, WELS	Sept. 11	.1	Lightning	.....
T. 11, R. 9, WELS	Sept. 11	....	Lightning	.....
T. 11, R. 9, WELS	Sept. 11	....	Lightning	.....
T. 11, R. 9, WELS	Sept. 11	....	Lightning	.....
T. 11, R. 7, WELS	Sept. 11	....	Lightning	.....
T. 15, R. 11, WELS	Sept. 12	....	Lightning	.....
T. 10, R. 3, WELS	Oct. 15	....	Campers	.....
Franklin County				
T. 2, R. 3, WBKP	July 5	.3	Lumbering	1.00
T. 3, R. 6, WBKP	July 27	....	Lightning	.....
Dallas Pl.	Aug. 10	....	Smokers	.....
Sandy River Pl.	Sept. 28	....	Campers	.....
Hancock County				
T. 9, SD	April 17	10	Brush or Debris Burning	10.00
T. 9, SD	April 20	5	Brush or Debris Burning	25.00
Osborn Pl.	July 13	1	Campers	8.00
T. 28, MD.	July 28	....	Lightning	.....
T. 35, MD.	July 28	....	Lightning	.....

MAINE FORESTRY DISTRICT FIRE RECORD 1952

Location	Date	Acreage	Cause	Damage
Hancock County—Cont.				
T. 34-35-28, MD	Aug. 1	7,610	Lumbering	$74,600.00
T. 8, SD	Aug. 2	1	Smokers	14.00
T. 35, MS	Aug. 3	....	Lightning	.....
T. 28, MD	Aug. 5	....	Lightning	.....
T. 35, MD	Sept. 11	....	Lumbering	.....
Oxford County				
Magalloway Pl.	July 27	.6	Lightning	1.00
T. 4, R. 3, WBKP	July 27	....	Lightning	.....
Riley	Oct. 23	.5	Smokers	1.00
Penobscot County				
Kingman Pl.	April 26	.2	Smokers	.....
Medway	April 26	.1	Brush or Debris Burning	.....
Medway	April 27	4.5	Miscellaneous	10.00
T. 1, R. 8, WELS	April 29	.8	Brush or Debris Burning	1.00
Medway	July 5	.1	Brush or Debris Burning	.....
T. 1, R. 8, WELS	July 6	....	Smokers	.....
T. 2, R. 8, NWP	July 7	2.5	Smokers	113.00
T. 2, R. 6, WELS	July 7	1	Incendiary	2.00
Kingman Pl.	July 7	.2	Smokers	3.00
Medway	July 7	6	Lightning	18.00
T. 1, R. 7, WELS	July 10	....	Smokers	100.00
T. 2, R. 6, WELS	July 10	1	Smokers	3.00
T. 3, R. 7, WELS	July 12	....	Lightning	.....
Drew Pl.	July 13	5	Lightning	5.00
T. 1, R. 6, WELS	July 13	.5	Lightning	2.00
T. 3, R. 9, NWP	July 13	1	Lightning	3.00
Seboeis Pl.	July 13	1	Lightning	3.00
T. 1, R. 6, WELS	July 13	.5	Lightning	5.00
Lakeville Pl.	July 14	....	Lightning	.....
Lakeville Pl.	July 14	.2	Lightning	.....
Lakeville Pl.	July 14	....	Lightning	.....
Lakeville Pl.	July 14	....	Lightning	.....
Lakeville Pl.	July 14	....	Lightning	.....
Lakeville Pl.	July 14	....	Lightning	.....
T. 1, R. 7, WELS	July 14	.8	Lightning	8.00
T. 1, R. 7, WELS	July 14	.1	Lightning	1.00
T. 8, R. 7, WELS	July 15	.7	Lightning	16.00
T. 8, R. 8, WELS	July 15	.1	Lightning	16.00
T. 2, R. 6, WELS	July 15	58	Smokers	1,360.00
E. Hopkins Academy Grant	July 20	.8	Smokers	8.00
Indian No. 4	July 21	....	Lightning	.....
T. 1, R. 8, WELS	July 24	....	Lightning	.....
T. 3, R. 8, WELS	July 24	....	Lightning	.....
T. 1, R. 8, WELS	July 24	....	Lightning	.....
T. A, R. 7, WELS	July 24	....	Lightning	.....
T. 2, R. 7, WELS	July 25	....	Lightning	.....
T. 7, R. 8, WELS	July 27	....	Lightning	.....
T. 7, R. 6, WELS	July 27	....	Lightning	.....
T. 8, R. 6, WELS	July 27	....	Lightning	.....
T. A, R. 7, WELS	July 27	....	Smokers	.....
Webster Pl.	Aug. 1	....	Lightning	.....
Mattamiscontis	Aug. 1	.2	Lightning	1.00
Mattamiscontis	Aug. 1	.5	Lightning	2.00
Kingman Pl.	Aug. 25	.2	Miscellaneous	1.00
Kingman Pl.	Aug. 28	.2	Campers	1.00
T. 2, R. 9, NWP	Aug. 29	....	Lightning	.....
Lakeville Pl.	Aug. 29	....	Lightning	.....
T. 1, R. 8, WELS	Sept. 8	....	Smokers	.....
T. 7, R. 7, WELS	Sept. 11	....	Lightning	15.00
T. 7, R. 7, WELS	Sept. 11	....	Lightning	.....
T. 7, R. 8, WELS	Sept. 11	....	Lightning	.....
T. 6, R. 7, WELS	Sept. 25	....	Lumbering	.....
Indian No. 3	Oct. 13	....	Brush or Debris Burning	.....
T. 7, R. 8, WELS	Oct. 21	....	Campers	.....
W. Hopkins Academy Grant	Oct. 22	.1	Campers	.....
T. A, R. 7, WELS	Oct. 26	.8	Miscellaneous	3.00
Indian No. 3	Oct. 27	....	Campers	.....
T. 6, R. 8, WELS	Oct. 31	....	Smokers	.....
T. A, R. 7, WELS	Nov. 3	....	Campers	.....

MAINE FORESTRY DISTRICT FIRE RECORD 1952

Location	Date	Acreage	Cause	Damage
Piscataquis County				
T. 2, R. 13, WELS	April 25	4	Brush or Debris Burning	$30,004.00
T. 2, R. 10, WELS	April 30	30	Smokers	330.00
T. 5, R. 10, WELS	May 18	....	Campers	.....
T. 6, R. 9, WELS	June 5	....	Lightning	.....
T. 3, R. 11, WELS	June 15	.5	Smokers	1.00
T. 7, R. 11, WELS	June 17	....	Lightning	.....
T. 7, R. 11, WELS	June 17	....	Lightning	.....
T. 6, R. 14, WELS	June 17	....	Lightning	.....
T. 6, R. 9, NWP	June 25	....	Campers	.....
T. B, R. 11, WELS	July 2	1.2	Lumbering	77.00
T. 2, R. 10, WELS	July 6	.5	Campers	2.00
T. 2, R. 8, WELS	July 6	.8	Smokers	3.00
T. B, R. 11, WELS	July 10	....	Lumbering	.....
T. 9, R. 10, WELS	July 12	....	Lightning	.....
Williamsburg	July 13	.5	Smokers	1.00
T. 2, R. 9, WELS	July 13	....	Campers	.....
Bowerbank	July 14	20	Lightning	42.00
T. 7, R. 14 & 15, WELS	July 14	121	Lightning	472.00
Elliottsville Pl	July 14	1.5	Lightning	21.00
T. 5, R. 10, WELS	July 15	....	Smokers	.....
Bowerbank	July 16	1.2	Lightning	2.00
T. 3, R. 10, WELS	July 16	.3	Smokers	2.00
T. 2, R. 13, WELS	July 16	....	Smokers	.....
T. 6, R. 9, NWP	July 18	....	Incendiary	.....
T. 5, R. 10, WELS	July 18	....	Smokers	.....
T. 6, R. 9, NWP	July 19	....	Incendiary	.....
T. 4, R. 11, WELS	July 19	....	Lightning	.....
Days Academy Grant	July 19	92	Lightning	1,550.00
Elliottsville Pl	July 19	.5	Lightning	2.00
T. 6, R. 9, NWP	July 19	....	Incendiary	.....
T. 10, R. 10, WELS	July 20	....	Lightning	.....
Bowerbank	July 20	.1	Lightning	.....
T. 8, R. 10, WELS	July 20	....	Lightning	.....
T. 2, R. 6, BKP, EKR	July 22	....	Lightning	.....
Orneville	July 23	1.5	Campers	3.00
T. 2, R. 10, WELS	July 24	....	Lightning	.....
T. 3, R. 10, WELS	July 24	....	Lightning	.....
T. 3, R. 9, WELS	July 24	.6	Lightning	7.00
T. 2, R. 9, WELS	July 24	.5	Lightning	1.00
T. 2, R. 9, WELS	July 24	8	Lightning	32.00
T. 2, R. 9, WELS	July 24	....	Lightning	.....
T. 2, R. 9, WELS	July 24	....	Lightning	.....
Barnard Pl	July 25	2	Smokers	4.00
T. B, R. 10, WELS	July 25	4	Campers	8.00
East Middlesex Canal Grant	July 27	....	Lightning	.....
T. 8, R. 11, WELS	July 27	.1	Lightning	.....
T. 8, R. 11, WELS	July 27	.1	Lightning	.....
T. 10, R. 13, WELS	July 27	....	Lightning	.....
T. 8, R. 12, WELS	July 27	....	Lightning	.....
T. 6, R. 12, WELS	July 27	....	Lightning	.....
T. 8, R. 13, WELS	July 27	....	Lightning	.....
T. 8, R. 14, WELS	July 27	....	Lightning	.....
T. 7, R. 9, WELS	July 27	....	Lightning	.....
T. 7, R. 9, WELS	July 27	....	Lightning	.....
T. 7, R. 10, WELS	July 27	....	Lightning	.....
T. 7, R. 10, WELS	July 27	....	Lightning	.....
T. 1, R. 12, WELS	July 27	1.5	Lightning	16.00
Williamsburg	July 29	7	Smokers	1,064.00
T. 6, R. 10, WELS	Aug. 2	....	Lightning	.....
East Middlesex Canal Grant	Aug. 2	700	Lightning	143,967.00
T. 1, R. 14, WELS	Aug. 5	.2	Lightning	1.00
Elliottsville Pl	Aug. 11	.1	Lightning	.....
T. 5, R. 11, WELS	Aug. 30	.1	Campers	.....
T. 10, R. 14, WELS	Sept. 2	.5	Lightning	1.00
T. 10, R. 10, WELS	Sept. 6	....	Smokers	.....
T. 8, R. 10, WELS	Sept. 11	....	Lightning	.....
T. 10, R. 10, WELS	Sept. 11	....	Lightning	.....
T. 10, R. 10, WELS	Sept. 11	....	Lightning	.....
T. 9, R. 9, WELS	Sept. 11	....	Lightning	.....
T. 4, R. 10, WELS	Sept. 15	.2	Lumbering	2.00
T. 5, R. 9, NWP	Sept. 18	....	Miscellaneous	.....
T. 5, R. 14, WELS	Sept. 27	.2	Lumbering	1.00
Orneville	Oct. 17	1.5	Smokers	3.00
Orneville	Oct. 30	.2	Smokers	.....
Elliottsville Pl	Nov. 1	....	Lumbering	.....

MAINE FORESTRY DISTRICT FIRE RECORD 1952

Location	Date	Acreage	Cause	Damage
Somerset County				
Dennistown Pl.	May 2	2	Smokers	$4.00
T. 8, R. 19, WELS	May 20	....	Campers	.....
T. 4, R. 18, WELS	June 1	....	Campers	.....
T. 5, R. 1, NBKP	June 16	....	Campers	.....
T. 6, R. 19, WELS	June 30	....	Smokers	.....
T. 7, R. 19, WELS	July 1	....	Lumbering	.....
T. 2, R. 1, BKP, WKR	July 1	.1	Campers	.....
Moscow	July 4	3	Smokers	78.00
T. 7, R. 16—T. 6, R. 16—T. 6, R. 15, WELS	July 5	2,400	Smokers	11,276.00
T. 8, R. 18, WELS	July 7	5	Smokers	500.00
Pleasant Ridge Pl.	July 9	.2	Campers	102.00
T. 5, R. 18, WELS	July 9	.8	Smokers	2.00
T. 8, R. 19, WELS	July 12	....	Lightning	.....
T. 4, R. 7, BKP, WKR	July 12	....	Lightning	.....
T. 3, R. 5, BKP, WKR	July 12	3	Campers	24.00
T. 3, R. 4, BKP, WKR	July 14	.5	Lightning	1.00
T. 3, R. 4, BKP, WKR	July 14	1.5	Lightning	2.00
T. 1, R. 4, BKP, WKR	July 14	.1	Lightning	1.00
T. 2, R. 4, BKP, WKR	July 14	.1	Lightning	.....
T. 3, R. 3, NBKP	July 14	1,200	Lightning	16,488.00
T. 4, R. 6, BKP, WKR	July 14	.2	Lightning	1.00
T. 6, R. 1, NBKP	July 14	2	Lightning	8.00
T. 2, R. 4, NBKP	July 14	.2	Lightning	1.00
Seboomook	July 15	.2	Lightning	1.00
T. 1, R. 6, EKR	July 18	....	Campers	.....
T. 4, R. 3, NBKP	July 20	....	Lightning	.....
T. 2, R. 4, BKP, WKR, (Pierce Pond)	July 26	1,500	Lumbering	149,867.00
Moscow	July 26	....	Smokers	.....
T. 1, R. 6, BKP, WKR	July 27	.2	Lightning	3.00
T. 1, R. 6, BKP, EKR	July 27	.2	Lightning	1.00
Sandbar Tract	July 27	.2	Lightning	1.00
T. 1, R. 6, BKP, WKR	July 27	....	Lightning	.....
T. 1, R. 6, BKP, WKR	July 27	.2	Lightning	2.00
T. 3, R. 7, BKP, WKR	July 27	.2	Lightning	3.00
T. 1, R. 6, BKP, WKR	July 27	.1	Lightning	.....
T. 5, R. 6, BKP, WKR	July 28	2	Campers	6.00
T. 2, R. 7, BKP, WKR	July 28	127	Lightning	892.00
Brighton Pl.	July 31	.5	Smokers	1.00
T. 7, R. 16, WELS	Aug. 2	3.5	Smokers	385.00
T. 6, R. 18, WELS	Aug. 29	.5	Smokers	1.00
Rockwood Strip	Aug. 29	1	Lightning	2.00
T. 2, R. 4, BKP, WKR	Aug. 29	.8	Lightning	2.00
T. 1, R. 1, NBKP	Aug. 29	1	Lightning	2.00
T. 1, R. 7, BKP, WKR	Aug. 29	1.5	Lightning	3.00
T. 2, R. 4, NBKP	Aug. 29	....	Smokers	.....
Caratunk Pl.	Sept. 4	....	Lightning	.....
T. 3, R. 3, NBKP	Sept. 8	.2	Smokers	1.00
T. 2, R. 7, BKP, WKR	Sept. 11	.2	Lightning	1.00
T. 3, R. 5, NBKP	Sept. 11	....	Lightning	.....
T. 1, R. 1, NBKP	Sept. 11	.1	Lightning	.....
T. 2, R. 3, NBKP	Sept. 29	.2	Lightning	1.00
T. 6, R. 7, BKP, WKR	Oct. 14	.2	Smokers	1.00
T. 4, R. 18, WELS	Oct. 18	....	Campers	.....
T. 3, R. 4, BKP, WKR	Oct. 21	3	Campers	6.00
West Forks Pl.	Oct. 23	3	Lumbering	6.00
T. 5, R. 6, BKP, WKR	Oct. 24	2	Smokers	4.00
Washington County				
Centerville	April 4	6	Smokers	12.00
Wesley	April 12	1.5	Smokers	3.00
Marion	April 13	17	Smokers	69.00
T. 18, MD.	April 20	2	Incendiary	30.00
Trescott	April 21	126	Smokers	156.00
Marion	April 23	4	Smokers	8.00
Marion	May 30	1	Miscellaneous	2.00
Marion	July 2	1.8	Brush or Debris Burning	12.00
T. 29, MD.	July 6	....	Miscellaneous	.....
T. 6, ND	July 7	.7	Smokers	16.00
Crawford	July 10	.2	Smokers	1.00
Grand Lake Stream Pl.	July 14	....	Lightning	.....
T. 27, ED	July 14	.2	Lightning	1.00
T. 27, ED	July 14	6.2	Lightning	48.00
T. 6, R. 1, NBPP	July 14	.2	Lightning	.....
T. 6, R. 1, NBPP	July 14	.1	Lightning	.....
T. 31, MD.	July 15	3	Lightning	36.00
T. 31, MD.	July 15	....	Lightning	.....

MAINE FORESTRY DISTRICT FIRE RECORD 1952

Location	Date	Acreage	Cause	Damage
Washington County—Cont.				
T. 42, MD	July 15	.5	Lightning	$1.00
Trescott	July 16	....	Miscellaneous	.....
T. 26, ED	July 18	600	Smokers	36,920.00
T. 24, ED	July 26	.2	Smokers	1.00
T. 9, R. 4, NBPP	July 27	....	Lightning	.....
Codyville Pl	July 28	.2	Lightning	11.00
Codyville Pl	July 28	....	Lightning	3.00
T. 26, ED	July 29	3.5	Lightning	49.00
T. 26, ED	July 29	.2	Lightning	12.00
Deblois	Aug. 1	2,000	Smokers	18,575.00
T. 35, MD	Aug. 2	....	Lightning	.....
T. 27, ED	Aug. 3	....	Campers	.....
T. 1, R. 3, TS	Aug. 13	.1	Smokers	.....
T. 6, ND	Sept. 27	....	Lumbering	.....
Codyville Pl	Sept. 29	.2	Miscellaneous	1.00

SUMMARY OF FOREST FIRES FOR 1951-1952 by MONTHS, COUNTIES, AND CAUSES—MAINE FORESTRY DISTRICT

	No. of Fires		Acreage		Damage	
	1951	1952	1951	1952	1951	1952
By Months:						
April	4	15	6	213	$17.00	$30,662.00
May	45	5	419	3	1,961.00	6.00
June	19	11	64	1	8,180.00	1.00
July	11	179	9	7,980	239.00	263,422.00
August	7	43	..	10,405	20.00	241,761.00
September	4	31	1	2	1.00	23.00
October	28	15	4	11	74.00	24.00
November	..	2	..	..	—	....
	118	301	503	18,615	$10,492.00	$535,899.00
By Counties:						
Aroostook	40	61	20	1,856	1,229.00	46,273.00
Franklin	5	4	32	....	349.00	1.00
Hancock	3	10	74	7,627	271.00	74,657.00
Oxford	4	3	82	1	7,088.00	2.00
Penobscot	13	59	90	87	797.00	1,700.00
Piscataquis	23	75	29	1,002	107.00	177,619.00
Somerset	12	56	8	5,267	52.00	179,680.00
Washington	18	33	168	2,775	599.00	55,967.00
	118	301	503	18,615	$10,492.00	$535,899.00
By Causes:						
Lightning	13	165	....	2,720	....	178,397.00
Railroad	3	....	19	....	56.00	....
Campers	15	35	86	18	1,429.00	191.00
Smokers	30	60	103	6,726	7,541.00	102,403.00
Debris Burning	12	9	111	22	846.00	30,052.00
Incendiary	32	6	147	5	497.00	36.00
Lumbering	3	16	32	9,116	105.00	224,775.00
Miscellaneous	10	10	5	8	18.00	45.00
	118	301	503	18,615	$10,492.00	$535,899.00

ORGANIZED TOWNS—6,429,783 ACRES

Fred E. Holt, Supervisor

During the biennium 1951-1952 the forest fire organization, made possible by the 1949 legislature, has consolidated its position and implemented its program through continued training, completion of a basic radio network for all personnel, substantial progress on a program of providing wardens' living quarters, and increased emphasis on public relation efforts aimed at forest fire prevention.

The Northeastern Forest Fire Protection Commission started an active program to train men for supervisory positions for managing large fires during this biennium.

The fire hazard along the coastal area built up relatively early in 1951. A serious fire hazard, due to high winds in late May, resulted in 174 fires for that month. In early June heavy rains began and no serious fire threat developed during the rest of the season. 303 fires for the season was the lowest fire incidence since 1945.

The 1952 season was characterized by rainfall deficiencies in April and July, followed by heavy fire incidence in these months. In southwestern Maine, a dry period in October kept the burning index high for several weeks but relatively few fires started. Watchmen were retained until mid-November in this section of the state. A larger than usual number of lightning fires occurred in July. Ground conditions were extremely dry in the eastern and central sections during this period. Southwestern Maine did not develop such critical conditions at this time so that personnel from this section was used in the area of high fire incidence. This season served to emphasize the wide variation in weather conditions within the state and the practical value of shifting personnel to meet peak fire loads.

The following table summarizes the precipitation, class danger day information, and number of fires occurring, by months:

1951	Precipitation	Class Danger Day					No. of Fires
		1	2	3	4	5	
April (15 days)	2.49	5	1	5	4	—	56
May	3.01	5	4	8	11	3	174
June	2.24	9	12	7	2	—	32
July	6.66	11	15	5	—	—	14
August	4.18	15	13	3	—	—	9
September	3.74	11	16	3	—	—	2
October	3.53	11	8	9	1	—	7
Other months	—	—	—	—	—	—	9
Total rainfall	25.85 Monthly Average	10.3	10.6	6.15	2.77	.46	303

1952	Precipitation	Class Danger Day 1	2	3	4	5	No. of Fires
April (16 days)	.86	2	1	3	8	2	203
May	4.29	8	7	10	5	1	39
June	4.21	7	11	11	1	—	37
July	.91	1	5	14	10	1	210
August	3.34	5	12	11	3	—	81
September	3.25	8	15	7	—	—	18
October	3.04	5	9	11	6	1	37
Other months	—	—	—	—	—	—	22
Total rainfall	19.90 Monthly Average	5.5	9.2	10.3.	5.07	.76	647

The following table shows the number of fires in each district for each year.

Year	District 1	2	3	4	5	6	7	
1951	63	40	22	71	33	43	31	303
1952	97	80	73	160	109	77	51	647
5 year average	150	88	61	103	73	49	40	

Personnel

Personnel problems have been relatively small. A 12% turnover of seasonal employees was the highest for a number of years, however. Although reclassification and adjustment of pay scales was accomplished 2 years ago, defense work in some areas has reduced the available labor force from which to choose. A woman was employed at one tower because of this heavy demand for labor in the area.

1 supervisor, 6 district wardens, 2 radio technicians, 1 warden-mechanic, and 2 dispatcher draftsmen were employed on a year-around basis. Half the salary of a year-around supervisor of the Keep Maine Green program was added to the organized town payroll in late 1951. 23 seasonal wardens, 28 watchmen, and half the salary of 2 other watchmen (1 in New Hampshire and 1 on the Moosehorn Wildlife Refuge) were carried during the fire seasons. Seasonal wardens were employed from March 18 to November 1 in 1951, and from March 16 to November 10 in southern districts in 1952. Watchmen were employed from about April 1 to November 1, depending on weather conditions as determined at the fire danger measurement stations in the area concerned.

Personnel continued to be spread very thin on peak fire days. To meet this situation, 3 men from the Maine Forestry District

were stationed in Districts 1, 4, and 6 for 1 week during the early spring fire season of 1952. In July and August, 1952, a heavy series of lightning fires in the Maine Forestry District demanded the services of everyone possible. State wardens from the organized towns worked 165 man-days on these fires in the Maine Forestry District. Much greater public service was rendered and more experience was obtained by the regular warden force in this manner. This practice of shifting men to peak fire load areas should be continued.

Training

Town Wardens. 4 training schools annually have been presented for the town forest fire wardens with the exception of 1952 when 1 of the schools was eliminated because of the busy fire season during July and August. These schools have been based primarily on field use of pumps and tools during the fire season with a winter or early spring meeting to bring town forest fire plans up to date and organize for the coming year.

Presenting a relatively narrow field of subject matter to this group 4 times a year has its problems in holding the interest of some of the wardens who have been in the work for long periods. This has been overcome in some cases by use of the more experienced town wardens as instructors.

Selectmen and deputy town wardens have been requested to attend the training schools and many have done so. However, there are still more who should be better informed of the town wardens' duties. Lack of funds for reimbursing these other town officials for their time at such schools is given by many as their reason for not attending.

State wardens. State wardens received 3 days' training during February and March of both 1951 and 1952. Schools were presented at 5 locations to reduce travel and keep the group to a manageable size. Major emphasis was placed on the Northeastern Forest Fire Protection Compact instruction on large fire overhead organization. In 1951, an introduction was given to the over-all organization. In 1952, operation of the Plans Chief section was presented. In addition to the wardens, a large number of watchmen attended the 1952 school as part of the program was to portray the watchman's job by way of a skit.

Meetings within and between districts were held to discuss mutual problems. In 1951, a series of 1-day meetings was held on compass use and in 1952 a series was held on map reading.

The emphasis on training has been not only to get across the information but also to break down some of the old resistance to training meetings which a few still retain.

Line Building Crews. Crews to be used on line building by the use of hand tools were given training primarily in 1951. These crews were made up of sawmill crews and high school boys, mostly the latter. 2 field meetings to discuss the advantages of each tool, followed by use of the tools on the line construction job were held with most of these groups. High school groups were enthusiastic and 1 group was used on a fire later in the season.

Public Relations

Public relations continued to justify much time and effort on the part of all wardens. District Warden Clark reports, "Again I must place this subject as one of the most important duties we have to perform."

Over 9,000 people were addressed at various meetings. In addition, a large number of individual contacts were made, many of which were with town officials and volunteer fire companies to help build up the amount of equipment in small communities. This has paid dividends in making equipment available closer to the fires, and in keeping local people interested in the fire problem.

The Keep Maine Green program received added impetus with the appointment of Joel Marsh as a year-around supervisor for this and the Tree Farm Program. Wardens in the field assisted the Keep Maine Green program by presenting information at Granges and other social and service organization meetings. In total, much time and effort were expended by wardens on this phase of forest fire prevention.

The press and radio have been very helpful throughout the fire season and especially so during periods of rapid build-up in fire danger. Even though we had an extended dry period during late October and early November, 1952, very few fires occurred. Heavy concentration of hunters and others using the woodlands during this period speaks well for the effective cooperation of the press and radio.

Facilities

During the past 2 years, living quarters for 9 seasonal wardens have been completed at Blue Hill, Enfield, St. Agatha, Washburn,

Houlton, Meddybemps, Holden, New Sharon, and Gorham. Living quarters for the district warden at Alfred was completed in October 1951. District warden quarters at West Paris are well underway at the present time. This building program has progressed more rapidly than anticipated for two reasons: more federal funds than estimated were received and low cost of buildings. Seasonal warden quarters 20′ x 30′ were held to $2,500; district warden quarters 24′ x 30′, one and one-half story, were held to $6,500. Labor, except masonry and plumbing, has been contributed by the wardens during periods of low fire hazard.

Year-around personnel are charged a nominal fee as rent and in addition furnish their own utilities. Seasonal wardens pay no rent during the fire season but if they choose to live there through the winter a fee is charged for these months. Utilities must be furnished by the warden in this case also.

Building sites are purchased before construction and are large enough for drying hose, cleaning equipment, and for a small garden spot as well as the storehouse and living quarters.

The building of living quarters is considered a long time program to give the department greater freedom in selecting qualified personnel. Also, wardens can then be reached at any time of day or night at a fixed location. This is an important consideration when it is understood that wardens are on call at all times during the fire season. It is felt that this program will result in a higher caliber, more stable, and better satisfied labor force.

The location of the storehouse at New Sharon was changed when a new lot was purchased for living quarters. This move was made in 1951.

In the fall of 1951, a wooden frame garage, 36′ x 46′, was started at the entomology laboratory on Hospital Street in Augusta. Funds were contributed by the entomology division and the general forestry account. Labor was provided by the warden force and several of the entomologists. This garage, completed in the fall of 1952, was needed to house the entomology truck and the 1½-ton rack truck. In addition, shifting of trucks in the late winter and spring requires housing which is not available at the highway garage except for short periods.

Summary of facilities in use:

6 District storehouses—2 living quarters
23 Seasonal storehouses—9 living quarters
1 Seasonal storehouse and repair shop

28 Towers with 31 watchmen camps or storage sheds
3 Auxiliary 24′ x 24′ storehouses
1 Hangar storehouse—20′ x 40′
1 Warehouse (2,700 square feet)
1 Garage—36′ x 46′

Equipment

Equipment losses have not been great during the past 2 years in the organized town area. Back pack pumps, shovels, forestry axes, and 1½″ hose have suffered heaviest losses. Replacement of these items, plus new hose to make up nearly 2,000′ per pump, has been the major expense.

A Dodge power wagon was purchased in 1951. During the fall of 1952, a 275 gallon tank was built as a slip-on unit for this truck. A high pressure pump will be operated by power take-off from the truck. Much informational and material help has been received from the Michigan Conservation Department in building this unit.

Town and private tank trucks have been found adequate to meet the requirements in most cases. The same applies to bulldozers. A large amount of this equipment is quickly available through early spring contact with the owners. This is considered the best alternative to high replacement and maintenance costs of large amounts of state-owned equipment.

Planes are also hired from private individuals as the need arises. As in the past, they have been used largely for locating hot spots and to give the warden in charge a better idea of his over-all problem on large fires. Most of the organized town area is well provided with roads except in some areas bordering the Maine Forestry District. Here planes are also useful in getting men to the fire more quickly.

Inventory of Fire Equipment—1952

Storehouses	33
Towers	28
Weather Stations	21
Motor Pumps	77
1½″ Hose	152,000′
Back Pumps	1,300
Hand Tools	4,200

Communications

Nearly 40 miles of metallic telephone circuits are owned and maintained from department facilities to nearby telephone utilities. These lines are largely tree lines but are being replaced by

pole lines where heavy timber cutting takes place. District warden Libby reports, "Last year (1951) we built over the telephone line from Weld to Oscar Sanborn's, set part of the poles over, ran 1 new wire and cut the right-of-way from Mt. Blue parking area to Weld Village. The line to Sabattus Mt. was built over—most all new poles set and new wires part of the way. New poles were set from Pleasant Mt. camp to the main road. A new telephone line was built last year to Streaked Mt. tower."

As a result of information given out by the New Brunswick Forest Service chief linesman at the 1952 spring training school, line improvement has been possible. District Warden Weymouth's report reads, "In 1952 we rebuilt Ossipee (tower) telephone line, transposing on every other pole and—grounded it several feet away from the tower. It has worked much better this summer."

Only the toll calls from the towers are paid on all New England Tel. & Tel. exchanges. This has resulted in a substantial saving in utility costs.

Dial phones have been installed at many towers. The mechanics of such phones has resulted in some impairment of service because of inability to get a clear line when necessary to report fires to town wardens.

Radio. During this biennium the basic radio network was completed. In addition to having all trucks equipped with a mobile unit and 1 Handie-talkie, each tower was serviced with a pack set. These sets are powered by dry batteries and because of their relatively short life they were operated only 10 minutes during each hour except in periods of high hazard.

From experience in the season of 1952, it would seem that more Handie-talkies on both frequencies would be helpful during peak fire periods.

Summary of radio units

40 Mobile (36—30 watt; 4—10 watt)
2 Semi Portable (10 watt)
30 Pack Sets (1 watt)
39 Handie-talkies (1 watt)
3 60 watt A. C. fixed stations
1 10 watt fixed station

Fire Danger Stations

Several new fire danger measurement stations were established during this period. These stations complete what is considered

full coverage of the area by the U. S. Forest Service danger measurement specialists. After further experience, it may be found possible to reduce the number of stations and still have adequate coverage.

The following stations were in operation at the end of the 1952 season:

Woods Stations	Open Stations
Agamenticus Mt.—York	Massabesic—Alfred
*Ossipee Mt.—Waterboro	*Mt. Blue—Weld, State Park
Opportunity Farm—New Gloucester	Camden—State Park
Lovell—U. S. Forest Service	*Medford—Medford
York Hill—New Sharon	Bradley—U. S. Forest Service
*Chase Hill—Canaan	*Blue Hill—Blue Hill
Cook Hill—Vassalboro	Acadia—U. S. Park Service
Mt. Ararat—Topsham	Blueberry Hill — Jonesboro — Maine Agr. Experiment Station
*Haskell Hill—Jefferson	*St. Agatha—St. Agatha
Frye Mt.—Montville	
High Cut Hill—Garland	
Harris Mt.—Dixmont	
Chick Hill—Clifton	

Data from the starred stations was relayed to the U. S. Weather Bureau at East Boston each evening to be used in preparing the following day's weather forecast. Forecasts were made for the coastal area (Zone 1), central Maine (Zone 2 and Zone 2A), and northern Maine (divided into Zone 3 south and Zone 3 north) and continued to be accurate, particularly during dry periods. Forecasts were received by phone at 7 A. M. daily and given out over the department's radio network at 7:15 A. M. and 9:15 A. M. Weather forecasts were requested daily by blueberry growers and others and long range forecasts on Friday were the basis for alerting the public to dangers over the weekend.

Fire danger readings were helpful in determining use to be made of the warden force, alerting men to build-up of hazardous conditions, and planning activities on going fires. Several stations located at year-around headquarters were operated as soon as brown patches began to show through the snow in the spring and continued until snows set in for the winter. These important stations determined when the seasonal organization should be activated or closed out for the season.

Prevention

Lunch Grounds. Lunch grounds have been taken over by the highway department with the exception of those located at the wardens' storehouses at Cornish, Dry Mills, and Weld. A number of motorists call at other storehouses to inquire regarding

lunching facilities. Several storehouse sites besides those listed have tables nearby which are made available on such occasions.

Two camp sites are maintained—1 at Fryeburg on the Saco River, and 1 at Pleasant Mt. watchman's camp. These are maintained primarily to take care of the large number of overnight campers from nearby boys' and girls' camps. The Saco River site is free of most fire hazards and the Pleasant Mt. site has close supervision of the watchman with hand tools available at all times.

Slash. The slash disposal law has been very effective but has required a great deal of time to get compliance and still maintain good personal relations with the woods crews that may be needed to assist on fire suppression. The same can be said for hazard clearance around portable sawmills. Progress has been made in getting more uniform enforcement of the provisions of both laws.

Misunderstanding of the slash law on the part of the public has in many cases required considerable of the warden's time. If the complainant had contacted the town forest fire warden, or better still the violator, many cases would have been cleared up on the spot. Many miles of road assigned to each warden has made it impractical for the state warden to find all violations. Town wardens and other town officials have been relied upon in many cases to report violations as they occur. This especially applies to back roads.

Dumps. Dumps are a continuing problem. Major emphasis has been placed on town dumps. Small towns are not compelled by law to have a dump which results in much indiscriminate dumping in hazardous areas. When it is decided to establish one it usually is started on waste land where compliance with the dump hazard clearance law is difficult. When wardens learn a dump is to be established they have given towns the benefit of experience gained in other areas. Use of old borrow pits has been urged as the best solution where available. Material is easily dumped, does not blow about readily, and practically always provides suitable topography for hazard clearance strips. Progress is being made as evidenced by District Warden Rowell's statement, "The condition of town dumps is showing improvement. Several have moved to safer locations; others have cleaned up—."

Roadside Signs. 10 roadside signs, 6′ x 8′, showing the class day by an arrow which is set daily have received much favorable

comment. Several requests have been received from other states for blueprints of these signs. Class day information is telephoned from the nearest fire danger station to the sign attendant each day a change occurs. Requests have been received for more of these signs within the state but the main difficulty has been to find a suitable location with an attendant who is always available to take care of the change in readings. Literature explaining the class day information has been widely circulated by the attendants of these signs, such as those operated by the Maine Publicity Bureau at Portland, Damariscotta, and Fryeburg.

Metal signs, 2′ x 4′, have also been well distributed at strategic points along the highways carrying a fire prevention message.

Blueberry Burning. Blueberry burning operations were hampered by wet weather in the spring of 1951. As the available burning period became shorter the burning index built up rapidly causing much concern about the forest fire hazard. A few fires escaped in the burning stage but more of them started fires because of lack of patrol several days later. Recommendation to town wardens that burning permits not be issued to blueberry producers on class four days led to real hardships in some cases and hard feelings in others.

To clear up the situation, members of the department attended a series of blueberry producers' meetings sponsored by the Maine Extension Service in the late winter of 1952. In essence, the producers were assured that town wardens would have full authority to issue permits after satisfying themselves proper precautions were being taken and that tools and manpower were adequate to control the burn at all times. The measurement of fire danger and its application to burning permits was discussed. It was also suggested that pre-season arrangements be made with town wardens where a large amount of burning was to be done, thus avoiding delays in getting permits when burning conditions were right. State wardens checked on burning operations to determine if conditions were safe and were being carried out in accordance with town wardens' instructions.

All district wardens reported good cooperation from blueberry growers in their districts during the 1952 season.

ORGANIZED TOWNS FIRE RECORD 1951

Location	Date	Acreage	Cause	Damage
Androscoggin County				
Livermore Falls	April 28	.5	Brush or Debris Burning	$2.00
Poland	April 29	10	Brush or Debris Burning	16.00
Greene	April 30	10	Brush or Debris Burning	10.00
Webster	May 1	4	Smokers	12.00
Lisbon	May 1	.2	Smokers	.....
Lisbon	May 3	.5	Miscellaneous	1.00
Livermore Falls	May 4	.2	Lumbering	5.00
Greene	May 5	15	Miscellaneous	45.00
Durham	May 5	2.5	Smokers	2.00
Poland	May 6	.4	Miscellaneous	4.00
Wales	May 9	.2	Smokers	.....
Durham	May 16	6	Lumbering	134.00
Poland	May 16	.3	Miscellaneous	.....
Turner	May 20	.5	Smokers	2.00
Webster	May 26	.1	Smokers	.....
Livermore Falls	June 6	.8	Smokers	4.00
Greene	June 8	3	Brush or Debris Burning	3.00
Lisbon	June 8	1.5	Smokers	2.00
Lisbon	June 10	.2	Miscellaneous	.....
Mechanic Falls	June 26	1	Railroad	1.00
Poland	July 10	....	Miscellaneous	.....
Lisbon	July 15	2	Smokers	96.00
Livermore Falls	July 24	3.5	Miscellaneous	25.00
Webster	Aug. 6	1	Smokers	3.00
Poland	Aug. 7	4	Smokers	8.00
Aroostook County				
Island Falls	April 22	35	Smokers	35.00
Oakfield	May 1	151.9	Campers	138.00
Littleton	May 1	....	Smokers	.....
Merrill	May 1	1	Brush or Debris Burning	1.00
New Limerick	May 2	5.5	Brush or Debris Burning	5.00
Oakfield	May 6	3	Miscellaneous	3.00
Easton	May 11	7	Brush or Debris Burning	7.00
Merrill	May 11	7	Brush or Debris Burning	45.00
Eagle Lake	May 11	1	Brush or Debris Burning	1.00
Perham	May 11	1.5	Miscellaneous	2.00
Monticello	May 11	12	Brush or Debris Burning	96.00
Bancroft	May 14	5	Smokers	10.00
St. Francis	May 16	18	Smokers	18.00
Connor Twp.	May 18	47	Brush or Debris Burning	47.00
New Limerick	May 18	5	Brush or Debris Burning	5.00
New Limerick	May 18	.5	Brush or Debris Burning	.....
Stockholm	May 19	.5	Brush or Debris Burning	.....
Fort Kent	May 19	1	Brush or Debris Burning	1.00
Littleton	May 19	17.2	Smokers	258.00
Cary Pl.	May 20	15.3	Smokers	129.00
St. Agatha	May 20	2	Smokers	2.00
Monticello	May 20	4	Smokers	44.00
Monticello	May 20	6	Brush or Debris Burning	6.00
Caswell Pl.	May 20	38	Lumbering	139.00
Wade	May 20	2	Miscellaneous	6.00
Orient	June 14	1	Smokers	268.00
Amity	June 20	18.8	Smokers	169.00
Linneus	June 22	....	Smokers	18.00
Connor Twp.	July 20	....	Smokers	.....
Dyer Brook	Oct. 24	....	Campers	.....
Cumberland County				
Cumberland	Mar. 28	1	Brush or Debris Burning	1.00
Cumberland	April 12	1.5	Brush or Debris Burning	2.00

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Location	Date	Acreage	Cause	Damage
Cumberland County—Cont.				
Cumberland	April 16	2.5	Smokers	$2.00
Windham	April 17	1	Brush or Debris Burning	1.00
Cumberland	April 21	.8	Brush or Debris Burning	1.00
Cumberland	April 21	.1	Miscellaneous	.....
Brunswick	April 21	5	Campers	11.00
Falmouth	April 21	.5	Railroad	.....
Windham	April 21	.5	Miscellaneous	1.00
Brunswick	April 22	5	Smokers	35.00
Falmouth	April 24	1	Smokers	1.00
Falmouth	April 28	.2	Brush or Debris Burning	.....
Windham	April 28	3	Lumbering	15.00
Harrison	April 28	3	Brush or Debris Burning	3.00
Harpswell	April 30	.5	Brush or Debris Burning	1.00
Windham	April 30	1	Lumbering	4.00
Gorham	May 1	.8	Brush or Debris Burning	10.00
Gray	May 1	1	Brush or Debris Burning	3.00
Gray	May 1	2	Brush or Debris Burning	7.00
Windham	May 1	1	Smokers	3.00
Naples	May 1	1	Lumbering	3.00
Bridgton	May 1	.5	Brush or Debris Burning	1.00
Standish	May 2	8.9	Lumbering	9.00
Windham	May 2	4	Miscellaneous	16.00
Cumberland	May 2	.2	Brush or Debris Burning	1.00
Bridgton	May 2	200	Lumbering	795.00
Freeport	May 3	.5	Brush or Debris Burning	1.00
Falmouth	May 4	.2	Miscellaneous	1.00
Windham	May 4	2	Miscellaneous	4.00
Cumberland	May 4	2	Smokers	.....
Brunswick	May 5	10	Miscellaneous	10.00
Gray	May 8	2	Miscellaneous	6.00
New Gloucester	May 9	3	Brush or Debris Burning	15.00
Bridgton	May 9	.5	Brush or Debris Burning	4.00
New Gloucester	May 9	75	Brush or Debris Burning	250.00
Bridgton	May 10	.3	Miscellaneous	.....
Bridgton	May 10	.2	Lumbering	1.00
Raymond	May 11	1	Smokers	1.00
Freeport	June 10	.8	Brush or Debris Burning	2.00
Bridgton	June 11	.1	Miscellaneous	1.00
Harpswell	June 22	.5	Brush or Debris Burning	.....
Gray	July 10	10	Lumbering	230.00
Cumberland	July 16	....	Lightning	.....
Raymond	July 27	1	Smokers	3.00
Falmouth	Aug. 31	.5	Brush or Debris Burning	.....
Cumberland	Dec. 13	.1	Miscellaneous	.....
Franklin County				
New Sharon	May 1	8	Brush or Debris Burning	30.00
Farmington	May 9	1	Smokers	323.00
Carthage	May 10	172	Miscellaneous	1,616.00
Phillips	July 3	4	Brush or Debris Burning	4.00
Hancock County				
Bucksport	Mar. 29	10	Brush or Debris Burning	2,010.00
Verona	Mar. 29	2	Brush or Debris Burning	2.00
Bucksport	April 8	7	Brush or Debris Burning	7.00
Bucksport	April 16	2.5	Miscellaneous	2.00
Aurora	April 28	24	Miscellaneous	24.00

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Location	Date	Acreage	Cause	Damage
Hancock County — Cont.				
Gouldsboro	April 30	2	Smokers	$6.00
Gouldsboro	April 30	60	Smokers	380.00
Gouldsboro	April 30	8	Brush or Debris Burning	8.00
Gouldsboro	May 1	2.5	Miscellaneous	25.00
Surry	May 1	5	Brush or Debris Burning	5.00
Tremont	May 2	.5	Smokers	.....
Brooksville	May 2	5	Brush or Debris Burning	25.00
Verona	May 2	25	Brush or Debris Burning	110.00
Brooklin	May 2	235	Brush or Debris Burning	2,721.00
Franklin	May 2	10.8	Brush or Debris Burning	91.00
Sedgwick	May 2	30	Brush or Debris Burning	85.00
Hancock	May 3	4	Brush or Debris Burning	4.00
Bar Harbor	May 4	.2	Miscellaneous	.....
Bar Harbor	May 5	....	Incendiary	.....
Gouldsboro	May 5	2	Miscellaneous	2.00
Hancock	May 6	4	Brush or Debris Burning	4.00
Bar Harbor	May 7	2.5	Brush or Debris Burning	32.00
Brooksville	May 9	.2	Brush or Debris Burning	1.00
Hancock	May 9	12	Brush or Debris Burning	60.00
Ellsworth	June 13	.2	Miscellaneous	1.00
Lamoine	June 25	1.8	Brush or Debris Burning	2.00
Gouldsboro	Sept. 22	10	Smokers	40.00
Kennebec County				
Windsor	Mar. 29	1	Brush or Debris Burning	.....
Mt. Vernon	April 14	1	Brush or Debris Burning	2.00
Winthrop	April 21	2	Brush or Debris Burning	.....
Litchfield	April 30	2	Miscellaneous	2.00
Vienna	May 1	50	Brush or Debris Burning	180.00
Rome	May 4	.5	Incendiary	.....
Windsor	May 4	3	Miscellaneous	3.00
Litchfield	May 9	1.5	Smokers	2.00
China	May 12	1	Incendiary	1.00
China	May 17	2	Incendiary	2.00
Windsor	May 20	1.5	Smokers	2.00
Monmouth	July 9	1.5	Lumbering	2.00
Litchfield	July 16	2	Lumbering	106.00
Knox County				
South Thomaston	Jan. 28	3	Smokers	.....
Union	April 21	20	Brush or Debris Burning	20.00
Camden	May 1	100	Brush or Debris Burning	300.00
Washington	May 1	50	Brush or Debris Burning	150.00
Washington	May 1	30	Brush or Debris Burning	146.00
So. Hope	May 2	20	Brush or Debris Burning	20.00
Washington	May 16	.2	Smokers	.....
Washington	May 18	.2	Miscellaneous	.....
Appleton	July 3	1	Miscellaneous	1.00
Lincoln County				
Boothbay	Mar. 29	1	Brush or Debris Burning	65.00
Dresden	April 9	1	Lumbering	1.00
Nobleboro	April 21	.2	Brush or Debris Burning	.....
Boothbay	April 27	1	Smokers	1.00

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Location	Date	Acreage	Cause	Damage
Lincoln County — Cont.				
Southport	April 27	.5	Brush or Debris Burning	.....
Boothbay Harbor	April 30	1.5	Miscellaneous	$2.00
Dresden	April 30	5	Brush or Debris Burning	16.00
Jefferson	May 1	.5	Miscellaneous	.....
Jefferson	May 1	45	Smokers	282.00
South Bristol	May 2	75	Brush or Debris Burning	275.00
Bristol	May 3	.2	Smokers	.....
Newcastle	May 11	1.4	Railroad	3.00
Jefferson	May 14	....	Brush or Debris Burning	.....
Dresden	May 16	2	Lumbering	4.00
Jefferson	May 16	1	Smokers	3.00
Wiscasset	May 19	5	Smokers	15.00
Boothbay Harbor	June 1	1	Smokers	3.00
Oxford County				
Hiram	April 29	2	Brush or Debris Burning	4.00
Fryeburg	April 30	.5	Brush or Debris Burning	3.00
Lovell	April 30	4	Miscellaneous	4.00
Newry	April 30	2	Lumbering	6.00
Bethel	May 1	5	Brush or Debris Burning	15.00
Peru	May 2	3.3	Brush or Debris Burning	33.00
Brownfield	May 2	.2	Lumbering	1.00
Stow	May 2	1	Miscellaneous	3.00
Hebron	May 5	.1	Smokers	.....
Hiram	May 8	27	Brush or Debris Burning	32.00
Paris	May 13	10	Brush or Debris Burning	30.00
Hebron	May 15	.1	Miscellaneous	.....
Sweden	May 16	.2	Miscellaneous	1.00
Rumford	May 16	2	Smokers	6.00
Fryeburg	May 16	15	Lumbering	45.00
Bethel	June 5	.5	Miscellaneous	.....
Paris	June 26	1	Miscellaneous	11.00
Bethel	Aug. 31	2	Smokers	2.00
Penobscot County				
Corinth	Mar. 28	2	Miscellaneous	2,002.00
Newport	April 15	5	Brush or Debris Burning	15.00
Orrington	April 27	23	Brush or Debris Burning	23.00
Enfield	April 28	1.5	Incendiary	3.00
Mattawamkeag	May 1	2	Brush or Debris Burning	30.00
Bradley	May 6	3	Campers	12.00
Corinth	May 7	10	Campers	50.00
Charleston	May 9	.5	Brush or Debris Burning	.....
Chester	May 14	2	Brush or Debris Burning	30.00
Edinburg	June 21	.1	Smokers	1.00
Corinth	June 25	.5	Smokers	1.00
Glenburn	July 9	.5	Smokers	1.00
Clifton	Oct. 21	1.5	Campers	8.00
Old Town	Oct. 21	.2	Smokers	.....
Stacyville Pl.	Oct. 23	8	Smokers	24.00
Piscataquis County				
Dover-Foxcroft	April 6	.2	Brush or Debris Burning	.....
Dover-Foxcroft	April 22	.5	Miscellaneous	.....
Dover-Foxcroft	April 30	10	Miscellaneous	30.00
Wellington	May 1	3	Smokers	3.00
Milo	May 1	3	Miscellaneous	9.00
Milo	May 5	.2	Miscellaneous	1.00
Dover-Foxcroft	May 13	.2	Miscellaneous	.....
Milo	May 14	2	Brush or Debris Burning	24.00
Milo	May 15	.2	Brush or Debris Burning	.....

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Location	Date	Acreage	Cause	Damage
Piscataquis County — Cont.				
Guilford	May 19	.5	Brush or Debris Burning	$2.00
Abbot	May 20	15	Smokers	15.00
Dover-Foxcroft	June 1	.2	Brush or Debris Burning	2.00
Milo	June 19	.2	Miscellaneous	.....
Brownville	Oct. 20	2	Smokers	26.00
Sagadahoc County				
Woolwich	April 22	2	Smokers	2.00
Bath	April 28	.5	Brush or Debris Burning	.....
Bath	April 28	3	Brush or Debris Burning	9.00
Georgetown	May 2	.1	Brush or Debris Burning	.....
Bowdoinham	May 6	2	Smokers	4.00
Bowdoinham	May 7	1	Smokers	1.00
Bowdoinham	May 9	3	Smokers	9.00
Bath	June 7	....	Miscellaneous	.....
Topsham	June 8	.8	Miscellaneous	1.00
Phippsburg	Aug. 5	2	Smokers	2.00
Topsham	Aug. 7	.8	Railroad	1.00
Somerset County				
Jackman Pl.	April 30	.5	Smokers	1.00
Norridgewock	May 1	6	Brush or Debris Burning	45.00
Madison	May 2	.2	Smokers	1.00
Athens	May 8	4	Smokers	16.00
Hartland	May 9	....	Smokers	.....
Canaan	May 9	.8	Smokers	1.00
Pittsfield	May 10	1	Smokers	4.00
Starks	May 15	10	Brush or Debris Burning	40.00
Canaan	June 11	.8	Brush or Debris Burning	1.00
Madison	June 26	.5	Smokers	4.00
Waldo County				
Palermo	Mar. 29	2	Brush or Debris Burning	.....
Palermo	May 1	1	Brush or Debris Burning	1.00
Northport	May 2	1.5	Brush or Debris Burning	2.00
Northport	May 2	2	Brush or Debris Burning	6.00
Brooks	May 5	1	Smokers	1.00
Winterport	May 6	3	Brush or Debris Burning	9.00
Searsmont	May 9	2	Brush or Debris.. Burning	2.00
Lincolnville	May 9	.5	Smokers	.....
Northport	May 10	.5	Smokers	.....
Frankfort	May 10	4	Miscellaneous	12.00
Northport	May 14	5	Brush or Debris Burning	10.00
Searsport	May 15	9	Brush or Debris. Burning	19.00
Searsmont	May 18	3	Smokers	3.00
Morrill	June 11	.5	Lumbering	.....
Searsmont	June 13	3	Brush or Debris Burning	3.00
Swanville	June 14	3	Smokers	3.00
Liberty	June 26	1.5	Smokers	3.00
Unity	July 27	.8	Smokers	1.00
Northport	Aug. 8	.5	Smokers	.....
Washington County				
Milbridge	April 27	2	Miscellaneous	2.00
Marshfield	April 30	3.5	Brush or Debris Burning	4.00
Steuben	May 1	4	Smokers	4.00
Steuben	May 1	5	Brush or Debris Burning	5.00
Pembroke	May 2	1	Smokers	3.00
Addison	May 2	.5	Brush or Debris Burning	.....

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Location	Date	Acreage	Cause	Damage
Washington County—Cont.				
Machiasport	May 2	5	Brush or Debris Burning	$10.00
Steuben	May 2	63	Brush or Debris Burning	279.00
East Machias	May 2	1	Brush or Debris Burning	1.00
Dennysville	May 4	.1	Smokers	.....
Cherryfield	May 4	5	Smokers	5.00
Harrington	May 5	15	Miscellaneous	1,165.00
Calais	May 6	5	Campers	15.00
Lubec	May 6	2	Smokers	2.00
Cutler	May 6	4	Smokers	4.00
Cutler	May 6	100	Smokers	100.00
Milbridge	May 10	1	Brush or Debris Burning	1.00
Perry	May 14	.5	Miscellaneous	2.00
Baileyville	May 19	....	Campers	25.00
Whiting	July 26	.5	Miscellaneous	.....
York County				
Lyman	April 20	.2	Incendiary	1.00
Kennebunk	April 21	1.5	Smokers	2.00
Eliot	April 30	5.5	Brush or Debris Burning	24.00
Old Orchard Beach	April 30	.3	Smokers	.....
Wells	April 30	2	Brush or Debris Burning	5.00
Old Orchard Beach	May 2	.3	Smokers	1.00
Newfield-Shapleigh	May 2	500	Miscellaneous	2,700.00
York	May 5	2.5	Brush or Debris Burning	7.00
Alfred	May 7	2.5	Lumbering	12.00
Lyman	May 8	.1	Lumbering	.....
Acton	May 10	.3	Miscellaneous	1.00
Buxton	May 10	2	Miscellaneous	28.00
Old Orchard Beach	May 14	.5	Smokers	2.00
Lebanon	May 16	250	Smokers	718.00
Old Orchard Beach	May 19	....	Incendiary	.....
Sanford	May 19	1	Miscellaneous	4.00
Alfred	June 1	2	Lumbering	16.00
Sanford	June 6	3	Brush or Debris Burning	6.00
Berwick	June 6	1.5	Smokers	2.00
North Kennebunkport	June 9	1.2	Smokers	4.00
Kittery	Aug. 7	1	Smokers	2.00
Old Orchard Beach	Aug. 13	.2	Smokers	.....
Acton	Sept. 8	5	Brush or Debris Burning	5.00
Wells	Oct. 16	1.5	Smokers	8.00
So. Berwick-Wells	Oct. 23	8.5	Brush or Debris Burning	16.00

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Location	Date	Acreage	Cause	Damage
Androscoggin County				
Durham	April 10	1.5	Miscellaneous	$5.00
Durham	April 10	3	Miscellaneous	8.00
Durham	April 13	3	Brush or Debris Burning	9.00
Poland	April 16	.5	Brush or Debris Burning	1.00
Mechanic Falls	April 18	.3	Brush or Debris Burning	6.00
Durham	April 19	1.5	Brush or Debris Burning	5.00
Poland	April 19	4	Brush or Debris Burning	16.00
Mechanic Falls	April 20	1.5	Brush or Debris Burning	5.00
Lisbon	April 20	.2	Brush or Debris Burning	1.00
Lisbon	April 20	.2	Miscellaneous	1.00
Livermore Falls	April 22	2	Railroad	2.00
Turner	April 24	1	Smokers	2.00
Poland	May 10	2	Lumbering	10.00
Lewiston	May 23	.5	Miscellaneous	1.00
Lewiston	May 24	.5	Smokers	1.00
Mechanic Falls	June 16	.8	Railroad	2.00
Lewiston	June 26	1	Incendiary	1.00
Leeds	July 5	15	Smokers	48.00
Poland	July 15	.2	Railroad	.....
Poland	July 15	....	Smokers	.....
Lisbon	July 15	3	Lumbering	140.00
Leeds	July 15	1	Lumbering	2.00
Livermore Falls	July 25	.5	Miscellaneous	1.00
Poland	July 26	.3	Smokers	.....
Lewiston	July 28	6	Miscellaneous	6.00
Poland	July 29	.1	Railroad	.....
Mechanic Falls	July 29	5	Lumbering	160.00
Greene	July 29	.1	Lumbering	.....
Webster	Aug. 3	35	Lumbering	580.00
Poland	Aug. 15	.1	Miscellaneous	1.00
Livermore Falls	Aug. 21	1	Smokers	9.00
Livermore Falls	Aug. 23	2	Miscellaneous	34.00
Auburn	Aug. 30	.5	Brush or Debris Burning	1.00
Mechanic Falls	Sept. 8	.2	Railroad	.....
Lewiston	Sept. 14	2	Smokers	6.00
Lewiston	Oct. 1	1	Incendiary	1.00
Lisbon	Oct. 11	....	Brush or Debris Burning	.....
Webster	Oct. 18	3	Smokers	9.00
Webster	Oct. 19	2	Smokers	6.00
Poland	Oct. 24	2	Miscellaneous	16.00
Lisbon	Oct. 24	.2	Miscellaneous	.....
Mechanic Falls	Oct. 25	.2	Smokers	.....
Lisbon	Oct. 30	1	Miscellaneous	3.00
Wales	Nov. 17	1	Smokers	1.00
Lisbon	Nov. 22	.2	Miscellaneous	.....
Mechanic Falls	Dec. 2	1.2	Brush or Debris Burning	1.00
Aroostook County				
Westfield	April 28	10.2	Brush or Debris Burning	20.00
Littleton	May 5	3	Campers	3.00
Merrill	May 6	3.5	Brush or Debris Burning	8.00
Littleton	May 6	2	Brush or Debris Burning	2.00
Oakfield	May 12	10	Smokers	20.00
Hamlin Pl.	June 18	....	Miscellaneous	.....
Littleton	July 3	.5	Campers	1.00
Dyer Brook	July 5	....	Brush or Debris Burning	.....
Ashland	July 5	.2	Smokers	.....
Island Falls	July 6	1.5	Miscellaneous	2.00
Caribou	July 6	8	Brush or Debris Burning	16.00
Merrill	July 7	.2	Campers	12.00
Benedicta	July 7	.1	Campers	.....
Dyer Brook	July 8	.5	Smokers	1.00
New Sweden	July 9	1	Smokers	6.00
Bridgewater	July 9	3	Smokers	50.00

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Location	Date	Acreage	Cause	Damage
Aroostook County—Cont.				
Woodland	July 10	.1	Miscellaneous	.....
Crystal	July 12	.5	Lightning	$2.00
St. John Pl.	July 12	....	Lightning	.....
Bridgewater	July 13	....	Brush or Debris Burning	.....
New Limerick	July 14	....	Lightning	.....
Island Falls	July 14	....	Lightning	.....
Portage Lake	July 15	.2	Smokers	1.00
Dyer Brook	July 16	.1	Miscellaneous	.....
Masardis	July 18	5	Campers	706.00
Portage Lake	July 18	....	Campers	.....
Portage Lake	July 19	....	Lightning	.....
Bridgewater	July 21	.1	Miscellaneous	.....
Sherman	July 21	6	Brush or Debris Burning	12.00
Portage Lake	July 22	.2	Smokers	1.00
Crystal	July 22	3	Smokers	354.00
New Sweden	July 24	10	Miscellaneous	104.00
Portage Lake	July 26	....	Incendiary	.....
Cary Pl.	July 27	1.5	Smokers	3.00
Merrill	July 27	....	Lightning	.....
Perham	July 27	....	Brush or Debris Burning	.....
Portage Lake	July 27	....	Campers	.....
Masardis	July 28	.2	Lightning	1.00
Amity	Aug. 1	....	Lightning	.....
Connor Pl.	Aug. 2	4	Campers	173.00
Moro Pl.	Aug. 2	....	Lightning	.....
Crystal	Aug. 3	.1	Miscellaneous	.....
Connor Pl.	Aug. 4	....	Smokers	.....
Caswell Pl.	Aug. 8	2	Lumbering	4.00
Connor Pl.	Aug. 13	.2	Smokers	1.00
Van Buren	Aug. 15	.5	Lumbering	2.00
Connor Pl.	Aug. 16	.2	Lumbering	1.00
Limestone	Aug. 30	6.5	Brush or Debris Burning	24.00
Limestone	Aug. 31	.1	Smokers	.....
Perham	Sept. 22	....	Brush or Debris Burning	.....
Island Falls	Oct. 11	2	Smokers	2.00
Cumberland County				
Cumberland	Mar. 30	1	Miscellaneous	2.00
New Gloucester	April 12	3	Brush or Debris Burning	9.00
Cumberland	April 13	.5	Brush or Debris Burning	2.00
North Yarmouth	April 13	.5	Brush or Debris Burning	2.00
Cumberland	April 16	.8	Brush or Debris Burning	2.00
Falmouth	April 18	.5	Brush or Debris Burning	2.00
Cumberland	April 18	1.2	Brush or Debris Burning	3.00
Yarmouth	April 19	1.2	Brush or Debris Burning	4.00
Cumberland	April 19	1.2	Smokers	4.00
Cape Elizabeth	April 20	4	Brush or Debris Burning	4.00
Falmouth	April 20	1	Brush or Debris Burning	10.00
Gray	April 20	1	Incendiary	3.00
Cumberland	April 20	30	Smokers	120.00
New Gloucester	April 20	60	Brush or Debris Burning	300.00
Gray	April 20	100	Brush or Debris Burning	445.00
Scarborough	April 20	5.5	Smokers	16.00
Scarborough	April 20	4	Smokers	12.00
Brunswick	April 20	845	Brush or Debris Burning	10,087.00
Cumberland	April 21	....	Smokers	.....
Bridgton	April 21	.5	Brush or Debris Burning	2.00
Raymond	April 30	1.5	Brush or Debris Burning	4.00

ORGANIZED TOWNS FIRE RECORD 1952

Location	Date	Acreage	Cause	Damage
Cumberland County—Cont.				
New Gloucester	April 30	3	Miscellaneous	$8.00
Bridgton	May 5	.5	Smokers	12.00
Bridgton	May 5	.1	Smokers	.....
Cumberland	May 9	6	Smokers	18.00
Harrison	May 10	.5	Brush or Debris Burning	8.00
Harrison	May 18	10	Brush or Debris Burning	77.00
New Gloucester	June 16	2	Brush or Debris Burning	6.00
Harrison	June 16	.5	Miscellaneous	6.00
Gray	June 23	50	Lumbering	140.00
Bridgton	June 23	20	Smokers	330.00
Harrison	July 2	.2	Miscellaneous	6.00
Bridgton	July 10	.5	Smokers	3.00
Cumberland	July 16	1.5	Smokers	33.00
Harpswell	July 23	4	Campers	12.00
Standish	July 26	.2	Miscellaneous	1.00
Falmouth	July 27	.5	Lightning	1.00
Harpswell	July 28	1	Smokers	3.00
Scarborough	July 29	2	Smokers	6.00
Otisfield	July 31	3	Lightning	9.00
Cumberland	July 31	....	Lightning	.....
Harpswell	Aug. 23	.5	Smokers	2.00
Falmouth	Aug. 23	.1	Miscellaneous	.....
Naples	Aug. 24	.3	Miscellaneous	1.00
Yarmouth	Aug. 27	.2	Lumbering	1.00
Falmouth	Aug. 30	.2	Miscellaneous	11.00
Harrison	Sept. 1	.2	Miscellaneous	.....
Scarborough	Oct. 24	4	Miscellaneous	8.00
Harpswell	Oct. 27	.5	Campers	.....
Freeport	Nov. 7	2	Smokers	6.00
Naples	Nov. 8	.1	Smokers	.....
Franklin County				
Chesterville	July 2	.5	Smokers	3.00
Carthage	July 14	....	Smokers	100.00
Chesterville	Aug. 26	35	Miscellaneous	385.00
Jay	Aug. 30	.1	Miscellaneous	11.00
Jay	Aug. 31	....	Miscellaneous	.....
Jay	Sept. 18	1	Lumbering	2.00
Hancock County				
Bucksport	Mar. 3	.1	Miscellaneous	.....
Tremont	April 11	5	Brush or Debris Burning	32.00
Bucksport	April 12	.2	Miscellaneous	1.00
Bucksport	April 12	.8	Smokers	2.00
Bucksport	April 12	3	Brush or Debris Burning	9.00
Bucksport	April 12	.5	Brush or Debris Burning	2.00
Bucksport	April 13	1	Brush or Debris Burning	3.00
Bucksport	April 13	.2	Brush or Debris Burning	1.00
Bucksport	April 13	4	Miscellaneous	12.00
Gouldsboro	April 13	3	Miscellaneous	20,003.00
Bar Harbor	April 13	8	Smokers	60.00
Bucksport	April 13	.2	Campers	1.00
Lamoine	April 15	1.4	Brush or Debris Burning	3.00
Bluehill	April 16	1	Brush or Debris Burning	2.00
Verona	April 16	3	Miscellaneous	6.00
Bucksport	April 16	1	Miscellaneous	3.00
Brooklin	April 16	2	Brush or Debris Burning	4.00
Bucksport	April 17	.1	Brush or Debris Burning	.....
Bucksport	April 17	.5	Brush or Debris Burning	1.00
Bucksport	April 17	.1	Miscellaneous	.....
Bucksport	April 17	.2	Miscellaneous	4.00
Orland	April 17	12	Brush or Debris Burning	24.00
Brooksville	April 17	2	Brush or Debris Burning	10.00

ORGANIZED TOWNS FIRE RECORD 1952

Location	Date	Acreage	Cause	Damage
Hancock County—Cont.				
Bucksport	April 18	.1	Brush or Debris Burning	.....
Bucksport	April 18	.1	Brush or Debris Burning	.....
Bucksport	April 18	.8	Railroad	$2.00
Bar Harbor	April 19	3	Smokers	6.00
Bar Harbor	April 20	75	Brush or Debris Burning	225.00
Bar Harbor	April 20	2	Smokers	26.00
Penobscot	April 20	35	Brush or Debris Burning	135.00
Castine	April 20	90	Brush or Debris Burning	270.00
Sedgwick	April 20	3	Lumbering	171.00
Sedgwick	April 20	5	Brush or Debris Burning	15.00
Franklin	April 20	3.5	Brush or Debris Burning	13.00
Brooklin	April 20	....	Miscellaneous	.....
Brooklin	April 20	2	Miscellaneous	8.00
Trenton	April 20	540	Brush or Debris Burning	4,304.00
Bucksport	April 21	.5	Miscellaneous	2.00
Bucksport	April 21	.2	Smokers	1.00
Orland	April 22	5	Brush or Debris Burning	15.00
Bluehill	April 22	2	Brush or Debris Burning	6.00
Bucksport	April 22	.1	Miscellaneous	.....
Bucksport	April 23	3	Brush or Debris Burning	9.00
Verona	April 23	....	Miscellaneous	.....
Bar Harbor	April 24	1.8	Smokers	4.00
Bluehill	April 24	1	Incendiary	2.00
Orland	May 3	5	Incendiary	75.00
Gouldsboro	May 3	25	Smokers	60.00
Surry	June 2	.2	Brush or Debris Burning	1.00
Orland	June 21	.2	Lumbering	.....
Gouldsboro	July 2	....	Smokers	.....
Gouldsboro	July 3	3.5	Incendiary	28.00
Orland	July 7	.5	Miscellaneous	2.00
Mariaville	July 8	.1	Brush or Debris Burning	.....
Ellsworth	July 12	20	Miscellaneous	218.00
Franklin	July 14	.5	Smokers	5.00
Hancock	July 14	....	Lumbering	.....
Stonington	July 15	.2	Lumbering	1.00
Sullivan	July 16	1.5	Miscellaneous	16.00
Waltham	July 17	100	Miscellaneous	800.00
Franklin	July 17	45	Smokers	387.00
Otis	July 18	.5	Campers	2.00
Bluehill	July 21	6	Smokers	22.00
Orland	July 21	.2	Smokers	401.00
Amherst	July 25	1.5	Lumbering	12.00
Amherst	July 28	.1	Lightning	.....
Bucksport	Aug. 5	3	Lightning	6.00
Bluehill	Aug. 19	.2	Miscellaneous	1.00
Brooksville	Aug. 25	2	Brush or Debris Burning	4.00
Sullivan	Aug. 30	2.5	Campers	30.00
Bluehill	Sept. 26	.1	Miscellaneous	.....
Bluehill	Sept. 29	.2	Incendiary	501.00
Bluehill	Nov. 10	1	Brush or Debris Burning	2.00
Gouldsboro	Dec. 12	2	Brush or Debris Burning	106.00
Kennebec County				
Gardiner	April 12	15	Brush or Debris Burning	45.00
Winslow	April 17	.2	Smokers	1.00
Winslow	April 18	3	Brush or Debris Burning	9.00
Gardiner	April 19	2	Brush or Debris Burning	6.00
Winslow	April 24	.5	Smokers	5.00
Clinton	April 25	5	Miscellaneous	15.00

ORGANIZED TOWNS FIRE RECORD 1952

Location	Date	Acreage	Cause	Damage
Kennebec County—Cont.				
Winslow	May 20	.2	Smokers	$1.00
Winslow	June 16	1	Miscellaneous	4.00
Vassalboro	June 21	5	Campers	15.00
Sidney	June 23	2	Smokers	20.00
Windsor	June 26	1	Lightning	2.00
Wayne	June 30	.5	Smokers	28.00
Windsor	July 1	1	Lumbering	5.00
Winthrop	July 3	.5	Campers	4.00
Winslow	July 5	2	Brush or Debris Burning	6.00
Winslow	July 6	20	Smokers	160.00
Litchfield	July 6	.5	Brush or Debris Burning	.....
Wayne	July 7	1	Lumbering	1.00
Vassalboro	July 8	.2	Smokers	1.00
China	July 9	8	Lumbering	17.00
Rome	July 12	.2	Smokers	.....
Benton	July 14	2	Smokers	2.00
Waterville	July 18	1	Brush or Debris Burning	4.00
Winslow	July 21	2	Miscellaneous	6.00
Windsor	July 21	2	Smokers	68.00
Litchfield	July 22	....	Miscellaneous	.....
Winslow	July 23	1	Miscellaneous	4.00
Clinton	July 23	5	Miscellaneous	5.00
Vassalboro	July 23	.1	Smokers	.....
Benton	July 24	2	Miscellaneous	2.00
Wayne	July 25	.2	Miscellaneous	1.00
Mt. Vernon	July 25	.2	Lumbering	1.00
Benton	July 25	4	Smokers	16.00
Clinton	July 25	.2	Miscellaneous	1.00
Albion	July 26	68	Miscellaneous	298.00
China	July 31	.2	Lightning	2.00
Unity Pl	Aug. 3	9	Miscellaneous	72.00
Clinton	Aug. 3	4.5	Miscellaneous	14.00
Winthrop	Aug. 21	1	Smokers	3.00
Winslow	Aug. 22	.5	Miscellaneous	1.00
China	Aug. 27	6	Lumbering	94.00
Albion	Aug. 29	1	Smokers	4.00
Vienna	Sept. 8	5	Lightning	20.00
Oakland	Sept. 18	2	Brush or Debris Burning	8.00
Windsor	Sept. 19	....	Lightning	.....
Oakland	Sept. 26	.2	Brush or Debris Burning	1.00
Winslow	Oct. 17	1	Smokers	2.00
Litchfield	Oct. 25	.5	Campers	1.00
Vienna	Nov. 2	.2	Incendiary	1.00
Knox County				
Cushing	April 10	2	Brush or Debris Burning	4.00
Cushing	April 12	5	Brush or Debris Burning	15.00
Thomaston	April 13	2.5	Brush or Debris Burning	8.00
Thomaston	April 13	2	Brush or Debris Burning	2.00
Union	April 13	.2	Brush or Debris Burning	.....
Owl's Head	April 13	4	Brush or Debris Burning	32.00
Union	April 16	1	Brush or Debris Burning	2.00
Union	April 16	.5	Miscellaneous	2.00
Union	April 17	1	Brush or Debris Burning	2.00
Union	April 17	25	Brush or Debris Burning	25.00
Union	April 19	1.2	Smokers	4.00
Union	April 20	.5	Brush or Debris Burning	1.00
Union	April 20	45	Brush or Debris Burning	65.00
Union	April 20	3	Brush or Debris Burning	3.00
Cushing	April 20	12	Brush or Debris Burning	38.00

ORGANIZED TOWNS FIRE RECORD 1952

Location	Date	Acreage	Cause	Damage
Knox County—Cont.				
Owl's Head	April 21	4	Brush or Debris Burning	$8.00
Union	April 23	4	Smokers	8.00
Warren	May 3	.5	Smokers	10.00
Appleton	May 28	.5	Incendiary	2.00
Washington	June 27	4	Lightning	8.00
Vinalhaven	July 5	3	Campers	12.00
Washington	July 8	....	Campers	.....
Washington	July 9	....	Lumbering	.....
Thomaston	July 14	....	Smokers	.....
Thomaston	July 14	....	Miscellaneous	.....
Appleton	July 15	2	Miscellaneous	6.00
Cushing	July 16	.5	Smokers	28.00
Union	July 26	1	Lumbering	1,153.00
Rockport	July 29	.5	Smokers	1.00
Rockport	Aug. 5	.2	Lightning	.....
Warren	Aug. 25	.2	Brush or Debris Burning	25.00
Lincoln County				
Boothbay	Feb. 23	.5	Brush or Debris Burning	8.00
Waldoboro	April 9	.2	Smokers	1.00
Waldoboro	April 12	2	Brush or Debris Burning	2.00
Edgecomb	April 13	9	Smokers	12.00
Jefferson	April 13	1	Smokers	133.00
Dresden	April 16	25	Brush or Debris Burning	5,075.00
Whitefield	April 19	10	Brush or Debris Burning	10.00
Bristol	April 20	100	Brush or Debris Burning	575.00
Newcastle	April 20	20	Brush or Debris Burning	6,038.00
Edgecomb	April 20	3	Incendiary	5.00
Damariscotta	April 20	8	Smokers	18.00
Bristol	April 24	.5	Smokers	2.00
South Bristol	April 24	1.5	Incendiary	3.00
South Bristol	April 24	....	Incendiary	.....
Jefferson	April 24	14	Smokers	42.00
Jefferson	April 25	.2	Smokers	.....
Jefferson	April 25	.1	Smokers	.....
Waldoboro	April 25	3	Brush or Debris Burning	9.00
Jefferson	May 1	2.2	Miscellaneous	5.00
Jefferson	May 8	.5	Brush or Debris Burning	2.00
Waldoboro	May 28	.1	Miscellaneous	.....
Alna	July 2	4	Lumbering	182.00
Waldoboro	July 3	.5	Smokers	1.00
Southport	July 10	.2	Smokers	.....
Alna	July 13	10	Lumbering	95.00
Somerville	July 14	1	Smokers	3.00
Nobleboro	July 17	.2	Miscellaneous	.....
Waldoboro	July 17	.2	Miscellaneous	2.00
Whitefield	July 20	2	Lumbering	40.00
Jefferson	July 21	....	Smokers	.....
Jefferson	July 23	....	Smokers	.....
Jefferson	July 23	....	Brush or Debris Burning	.....
Newcastle	July 25	1	Smokers	2.00
Waldoboro	July 26	....	Lumbering	.....
Bristol	July 26	....	Incendiary	.....
Bristol	July 26	....	Incendiary	.....
Bristol	July 26	....	Incendiary	.....
Bristol	July 28	.5	Smokers	2.00
Whitefield	July 30	2	Lumbering	26.00
Jefferson	July 30	....	Lumbering	.....
Bristol	July 31	....	Lightning	.....
Bristol	July 31	.5	Lightning	8.00
Bremen	July 31	.2	Lightning	4.00
Jefferson	Aug. 1	.2	Incendiary	.....
Bristol	Aug. 3	....	Incendiary	.....
Edgecomb	Aug. 25	2	Campers	2.00
Boothbay	Oct. 3	.5	Smokers	27.00
Loudville	Oct. 7	....	Miscellaneous	.....
Waldoboro	Oct. 18	.8	Campers	2.00

ORGANIZED TOWNS FIRE RECORD 1952

Location	Date	Acreage	Cause	Damage
Lincoln County—Cont.				
Dresden	Oct. 18	.1	Smokers	.....
Boothbay Harbor	Oct. 26	1.2	Brush or Debris Burning	$4.00
South Bristol	Oct. 27	.5	Smokers	4.00
Jefferson	Oct. 27	.2	Smokers	.....
Boothbay	Oct. 31	.8	Miscellaneous	28.00
Whitefield	Nov. 11	.2	Campers	.....
Boothbay Harbor	Dec. 5	1.2	Miscellaneous	1.00
Bristol	Dec. 13	2	Smokers	2.00
Boothbay Harbor	Dec. 28	1.8	Brush or Debris Burning	1.00
Oxford County				
Buckfield	April 20	1.1	Miscellaneous	2.00
Oxford	April 24	5	Railroad	5.00
Rumford	April 25	1	Brush or Debris Burning	5.00
Peru	April 30	3	Railroad	12.00
Peru	May 3	2	Railroad	2.00
Fryeburg	May 20	.8	Incendiary	16.00
Denmark	June 14	....	Smokers	.....
Buckfield	June 16	1.2	Smokers	80.00
Porter	June 16	1	Lumbering	5.00
Peru	June 21	.8	Smokers	1.00
Norway	June 23	1.5	Lumbering	88.00
Greenwood	June 26	....	Lightning	.....
Porter	June 26	....	Lightning	.....
Hartford	June 29	.1	Miscellaneous	.....
Waterford	July 4	....	Smokers	.....
Norway	July 13	1.5	Brush or Debris Burning	5.00
Greenwood	July 15	.5	Railroad	4.00
Hanover	July 17	.2	Smokers	1.00
Peru	July 28	....	Smokers	.....
Roxbury	July 31	.2	Smokers	3.00
Buckfield	Aug. 1	3.5	Miscellaneous	8.00
Brownfield	Aug. 3	.2	Miscellaneous	1.00
Peru	Aug. 3	1.5	Miscellaneous	18.00
Fryeburg	Aug. 9	.2	Miscellaneous	2.00
Hebron	Aug. 19	2	Incendiary	4.00
Stow	Aug. 21	.5	Brush or Debris Burning	1.00
Bethel	Aug. 24	.5	Miscellaneous	2.00
Paris	Aug. 24	2	Railroad	50.00
Paris	Aug. 26	2	Miscellaneous	4.00
Oxford	Aug. 26	1	Miscellaneous	1.00
Fryeburg	Aug. 27	2	Lumbering	144.00
Hiram	Aug. 31	.2	Smokers	.....
Bethel	Aug. 31	.2	Miscellaneous	2.00
Mexico	Sept. 8	1	Smokers	4.00
Newry	Oct. 26	3	Lumbering	9.00
Sweden	Nov. 8	.5	Campers	3.00
Penobscot County				
Holden	April 12	1	Brush or Debris Burning	3.00
Plymouth	April 12	25	Smokers	50.00
Old Town	April 17	75	Miscellaneous	75.00
Holden	April 19	30	Brush or Debris Burning	90.00
Holden	April 19	10	Brush or Debris Burning	30.00
Bradley	April 20	45	Smokers	155.00
Hampden	April 20	20	Miscellaneous	410.00
Hampden	April 21	3	Brush or Debris Burning	9.00
Garland	April 22	2	Miscellaneous	4.00
Old Town	April 24	50	Smokers	150.00
Woodville	April 27	5	Smokers	15.00
Eddington	April 27	1	Smokers	5.00
Dixmont	April 30	2	Brush or Debris Burning	18.00
LaGrange	May 2	4	Lumbering	60.00
Lowell	May 4	3	Miscellaneous	11.00
Passadumkeag	May 5	4	Smokers	20.00
Passadumkeag	June 1	2	Brush or Debris Burning	14.00
Exeter	June 14	2	Smokers	158.00

ORGANIZED TOWNS FIRE RECORD 1952

Location	Date	Acreage	Cause	Damage
Penobscot County—Cont.				
Lee	June 17	.1	Lightning	$1.00
Holden	June 23	6	Smokers	118.00
LaGrange	June 25	.1	Lumbering	.....
Chester	June 28	4	Smokers	8.00
Levant	July 1	.2	Brush or Debris Burning	2.00
Clifton	July 2	.1	Smokers	.....
Dixmont	July 3	2	Smokers	6.00
Corinth	July 5	2	Brush or Debris Burning	6.00
Springfield	July 12	.2	Smokers	2.00
Woodville	July 13	.2	Lightning	2.00
Clifton	July 14	.2	Smokers	36.00
Winn	July 14	.2	Lightning	3.00
Dixmont	July 15	.5	Brush or Debris Burning	2.00
Stetson	July 17	3	Miscellaneous	9.00
Passadumkeag	July 17	2	Campers	30.00
Woodville	July 18	.1	Lightning	1.00
Etna	July 19	1	Smokers	5.00
Enfield	July 19	.5	Smokers	2.00
Orono	July 20	19	Smokers	38.00
Corinna	July 21	2	Lumbering	4.00
Woodville	July 23	5	Miscellaneous	15.00
Stetson	July 24	.2	Smokers	1.00
Alton	July 24	2	Miscellaneous	6.00
Old Town	July 24	3	Campers	18.00
Hudson	July 24	6	Lumbering	306.00
Newport	July 25	.2	Smokers	1.00
Lincoln	July 25	.2	Brush or Debris Burning	1.00
Enfield	July 25	1	Smokers	3.00
Hudson	July 25	10	Smokers	40.00
Hudson	July 25	4	Smokers	12.00
Charleston	July 26	5	Smokers	1,050.00
Greenbush	July 31	2	Lightning	20.00
Etna	July 31	.5	Lightning	47.00
Lowell	July 31	350	Lightning	700.00
Enfield	Aug. 1	.5	Lightning	8.00
Burlington	Aug. 3	10	Lightning	150.00
Plymouth	Aug. 3	.2	Smokers	1.00
Orono	Aug. 4	10	Miscellaneous	30.00
Clifton	Aug. 5	....	Lightning	.....
Springfield	Aug. 5	.2	Lightning	2.00
Newport	Aug. 6	.1	Campers	.....
Mattawamkeag	Aug. 8	.2	Lightning	1.00
Hermon	Aug. 16	16	Miscellaneous	54.00
Passadumkeag	Aug. 16	2	Brush or Debris Burning	4.00
Glenburn	Aug. 26	.5	Brush or Debris Burning	4.00
Glenburn	Aug. 29	.2	Lumbering	1.00
Carmel	Aug. 29	.2	Smokers	2.00
Bradley	Oct. 10	8	Campers	88.00
Etna	Oct. 19	3	Smokers	25.00
Plymouth	Nov. 3	3.5	Smokers	4.00
Piscataquis County				
Atkinson	April 12	40	Smokers	2,120.00
Dover-Foxcroft	April 12	....	Miscellaneous	.....
Dover-Foxcroft	April 20	10	Miscellaneous	20.00
Dover-Foxcroft	April 21	.1	Miscellaneous	.....
Milo	April 24	10	Miscellaneous	20.00
Milo	April 26	20	Smokers	40.00
Brownville	May 13	.5	Smokers	1.00
Dover-Foxcroft	July 5	30	Lumbering	2,155.00
Shirley	July 9	.1	Smokers	.....
Dover-Foxcroft	July 15	1	Miscellaneous	3.00
Brownville	July 16	30	Lightning	1,004.00
Sangerville	Aug. 25	1	Brush or Debris Burning	2.00
Sagadahoc County				
Phippsburg	Feb. 14	5	Brush or Debris Burning	5.00
West Bath	April 12	1	Miscellaneous	1.00
Phippsburg	April 13	....	Smokers	.....
West Bath	April 13	10	Brush or Debris Burning	30.00

ORGANIZED TOWNS FIRE RECORD 1952

Location	Date	Acreage	Cause	Damage
Sagadahoc County—Cont.				
Topsham	April 16	2	Smokers	$6.00
Topsham	April 17	1	Brush or Debris Burning	2.00
Georgetown	April 18	2	Brush or Debris Burning	4.00
Topsham	April 19	2	Smokers	4.00
Georgetown	April 19	3	Smokers	708.00
West Bath	April 20	1	Miscellaneous	1.00
Phippsburg	April 24	5	Smokers	10.00
Phippsburg	May 1	2	Brush or Debris Burning	4.00
West Bath	June 24	....	Brush or Debris Burning	.....
Woolwich	June 26	.2	Smokers	2.00
Topsham	June 26	....	Lightning	.....
West Bath	June 30	....	Campers	.....
Georgetown	July 14	.2	Campers	3.00
Woolwich	July 17	.2	Smokers	3.00
Bowdoinham	July 25	53	Smokers	477.00
Topsham	July 26	1.2	Lumbering	11.00
Bowdoin	July 28	....	Campers	.....
Bowdoin	Aug. 3	8	Smokers	40.00
Bowdoinham	Sept. 1	3	Campers	9.00
Topsham	Oct. 25	3	Smokers	9.00
Woolwich	Dec. 17	.2	Brush or Debris Burning	.....
Georgetown	Dec. 19	6	Incendiary	12.00
Somerset County				
Pittsfield	April 20	1.5	Brush or Debris Burning	11.00
Canaan	May 6	1.8	Miscellaneous	7.00
Pittsfield	July 8	.1	Miscellaneous	.....
Anson	July 11	....	Brush or Debris Burning	.....
Anson	July 13	.1	Miscellaneous	.....
Detroit	July 17	1	Lumbering	11.00
Pittsfield	July 20	.2	Miscellaneous	1.00
Palmyra	July 20	.2	Campers	1.00
Pittsfield	July 21	.2	Miscellaneous	1.00
Pittsfield	July 24	.1	Brush or Debris Burning	.....
Pittsfield	July 26	3	Miscellaneous	9.00
Skowhegan	July 28	.1	Smokers	.....
Harmony	July 30	3	Miscellaneous	6.00
Embden	July 31	.5	Miscellaneous	2.00
Pittsfield	Aug. 1	.3	Lumbering	1.00
Madison	Aug. 2	.3	Smokers	1.00
Fairfield	Aug. 3	1	Smokers	1.00
Cornville	Aug. 7	2.5	Brush or Debris Burning	5.00
Smithfield	Oct. 21	18	Smokers	72.00
Pittsfield	Oct. 25	1	Smokers	2.00
Fairfield	Oct. 28	20	Smokers	60.00
Waldo County				
Knox	April 11	4	Miscellaneous	4.00
Burnham	April 12	3	Miscellaneous	9.00
Frankfort	April 18	5	Brush or Debris Burning	10.00
Swanville	April 18	1	Brush or Debris Burning	2.00
Searsport	April 18	.5	Incendiary	2.00
Monroe	April 19	3	Smokers	6.00
Lincolnville	April 20	12	Brush or Debris Burning	26.00
Stockton Springs	April 21	2	Brush or Debris Burning	6.00
Burnham-Detroit	April 23	1	Smokers	4.00
Frankfort	April 23	1	Brush or Debris Burning	4.00
Frankfort	April 24	1	Smokers	2.00
Northport	April 24	.5	Brush or Debris Burning	1.00
Prospect	April 27	2.1	Brush or Debris Burning	6.00
Palermo	April 27	5	Brush or Debris Burning	10.00

ORGANIZED TOWNS FIRE RECORD 1952

Location	Date	Acreage	Cause	Damage
Waldo County—Cont.				
Searsport	April 27	1	Brush or Debris Burning	$1.00
Freedom	May 2	9	Smokers	29.00
Burnham	June 23	2	Smokers	8.00
Palermo	June 26	.8	Smokers	10.00
Brooks	July 17	1	Incendiary	45.00
Waldo	July 24	1	Lightning	3.00
Knox	July 24	.3	Smokers	4.00
Palermo	July 31	.1	Lightning	.....
Knox	Aug. 3	.2	Smokers	.....
Monroe	Aug. 4	3	Miscellaneous	12,006.00
Burnham	Aug. 25	.1	Smokers	2.00
Knox	Aug. 25	.5	Lumbering	2.00
Unity	Aug. 25	4	Smokers	16.00
Freedom	Sept. 1	.2	Smokers	3.00
Frankfort	Sept. 1	1	Campers	3.00
Troy	Sept. 29	.2	Miscellaneous	2.00
Prospect	Oct. 22	.5	Smokers	.....
Jackson	Oct. 27	25	Smokers	25.00
Washington County				
Addison	April 12	3	Smokers	6.00
Lubec	April 13	6	Brush or Debris Burning	6.00
Steuben	April 13	2	Smokers	6.00
Addison	April 18	.5	Miscellaneous	1.00
Machias	April 20	75	Brush or Debris Burning	150.00
Addison	April 20	450	Miscellaneous	1,338.00
Pembroke	April 20	.5	Brush or Debris Burning	5.00
Columbia	April 20	60	Smokers	180.00
Pembroke	April 21	11	Smokers	63.00
Calais	April 22	2	Smokers	2.00
Machiasport	April 24	45	Brush or Debris Burning	285.00
East Machias	April 24	2	Campers	10.00
Cutler	April 24	500	Incendiary	1,500.00
Baring	April 25	.5	Smokers	1.00
Charlotte	April 25	7	Brush or Debris Burning	77.00
Milbridge	June 16	2	Brush or Debris Burning	18.00
Calais	July 14	.5	Lightning	3.00
Cutler	July 16	5	Smokers	15.00
Addison	July 18	.2	Campers	1.00
Talmadge	July 21	.1	Lightning	10.00
Machiasport	July 24	.2	Brush or Debris Burning	.....
Alexander	July 26	.1	Miscellaneous	.....
Cherryfield	July 26	320	Smokers	1,045.00
Steuben	July 30	.2	Smokers	1.00
Steuben	July 30	.8	Miscellaneous	1,502.00
Columbia Falls	July 30	.2	Smokers	12.00
Calais	Aug. 3	.5	Smokers	1.00
Columbia	Aug. 28	.2	Smokers	1.00
Roque Bluffs	Sept. 10	....	Lumbering	.....
Whiting	Oct. 22	1	Incendiary	2.00
York County				
South Berwick	April 12	5	Miscellaneous	13.00
Kennebunkport	April 12	6	Miscellaneous	18.00
Lebanon	April 12	.3	Brush or Debris Burning	1.00
Lebanon	April 12	3	Miscellaneous	6.00
Kittery	April 12	.8	Miscellaneous	2.00
Kennebunkport	April 16	.5	Smokers	1.00
Sanford	April 17	2	Miscellaneous	6.00
Kennebunk	April 18	.8	Lumbering	2.00
Kennebunk	April 20	2	Brush or Debris Burning	20.00
Kennebunk	April 20	90	Miscellaneous	1,226.00
Kennebunk	April 20	60	Miscellaneous	199.00
Acton	April 20	.2	Smokers	1.00
York	April 20	10	Miscellaneous	30.00
York	April 20	10	Brush or Debris Burning	32.00

ORGANIZED TOWNS FIRE RECORD 1952

Location	Date	Acreage	Cause	Damage
York County—Cont.				
Kittery	April 20	4	Brush or Debris Burning	$9.00
Eliot	April 20	3	Brush or Debris Burning	7.00
Sanford	April 20	4	Miscellaneous	13.00
North Kennebunkport	April 20	10	Smokers	22.00
Wells	April 21	1.5	Smokers	3.00
York	April 21	.2	Miscellaneous	1.00
Lebanon	May 1	20	Smokers	61.00
York	May 2	.2	Miscellaneous	1.00
Limerick	May 3	6	Smokers	24.00
Kennebunkport	May 3	.5	Incendiary	1.00
Old Orchard Beach	May 3	10	Incendiary	140.00
York	May 4	1	Smokers	3.00
Eliot	May 6	1.5	Brush or Debris Burning	15.00
Kennebunkport	May 10	3	Brush or Debris Burning	3.00
Eliot	May 2	.1	Smokers	1.00
Kennebunkport	May 28	.2	Smokers	.....
York	June 21	.5	Miscellaneous	1.00
Cornish	July 5	.2	Miscellaneous	1.00
York	July 7	3	Lumbering	6.00
Alfred	July 16	2	Miscellaneous	11.00
York	July 18	1	Smokers	4.00
York	July 18	4	Miscellaneous	13.00
Wells	July 24	1	Smokers	2.00
Buxton	July 24	2	Lumbering	4.00
York	July 25	.5	Miscellaneous	2.00
Wells	July 25	50	Smokers	160.00
Kennebunk	July 25	.2	Smokers	1.00
York	July 26	1	Smokers	3.00
York	July 26	3	Miscellaneous	10.00
Wells	July 28	1.5	Lightning	5.00
York	Aug. 3	1	Incendiary	4.00
Acton	Aug. 10	.2	Smokers	1.00
Lebanon	Aug. 24	.2	Smokers	1.00
Kennebunk	Sept. 9	.2	Smokers	1.00
York	Oct. 17	1.2	Miscellaneous	3.00
Lebanon	Oct. 18	.....	Miscellaneous	.....
Kennebunk	Oct. 23	20	Smokers	63.00
Kennebunkport	Oct. 25	2	Smokers	6.00
Sanford	Oct. 26	2.5	Miscellaneous	7.00
Newfield	Oct. 26	.2	Miscellaneous	1.00
Lyman	Nov. 2	25	Smokers	95.00
Kittery	Nov. 14	.3	Smokers	1.00

SUMMARY OF FOREST FIRES FOR 1951-1952 BY MONTHS, COUNTIES, AND CAUSES—ORGANIZED TOWNS

	No. of Fires		Acreage		Damage	
	1951	1952	1951	1952	1951	1952
By Months:						
January	1	....	3	....	....	....
February	....	2	....	6	....	$13.00
March	7	2	19	1	$4,080.00	2.00
April	56	203	288	4,059	749.00	58,092.00
May	174	39	2,745	142	14,513.00	714.00
June	32	37	51	112	532.00	1,075.00
July	14	210	27	1,365	469.00	14,800.00
August	9	81	12	200	18.00	14,075.00
September	2	18	15	17	45.00	560.00
October	7	37	22	130	82.00	485.00
November	....	11	....	34	....	113.00
December	1	7	....	14	....	123.00
	303	647	3,182	6,080	$20,488.00	$90,052.00
By Counties:						
Androscoggin	25	46	68	107	375.00	1,101.00
Aroostook	30	51	406	86	1,453.00	1,532.00
Cumberland	46	51	356	1,176	1,455.00	11,741.00
Franklin	4	6	185	37	2,033.00	501.00
Hancock	27	74	466	1,043	5,647.00	28,077.00
Kennebec	13	49	69	188	302.00	976.00
Knox	9	31	224	125	637.00	1,464.00
Lincoln	17	58	141	235	670.00	12,376.00
Oxford	18	36	76	40	196.00	482.00
Penobscot	15	68	60	771	2,200.00	4,146.00
Piscataquis	14	12	37	143	112.00	5,365.00
Sagadahoc	11	26	15	109	29.00	1,341.00
Somerset	10	21	24	55	113.00	191.00
Waldo	19	32	44	91	75.00	12,251.00
Washington	20	30	218	1,495	1,627.00	6,241.00
York	25	56	793	379	3,564.00	2,267.00
	303	647	3,182	6,080	$20,488.00	$90,052.00
By Causes:						
Lightning	1	44	....	415	....	2,023.00
Railroad	4	11	4	17	5.00	79.00
Campers	8	34	177	53	259.00	1,142.00
Smokers	98	196	715	1,262	3,174.00	10,222.00
Debris Burning	112	149	1,178	2,442	7,676.00	29,274.00
Incendiary	7	28	5	541	7.00	2,348.00
Lumbering	21	48	297	199	1,528.00	5,649.00
Miscellaneous	57	137	806	1,151	7,839.00	39,315.00
	303	647	3,182	6,080	$20,488.00	$90,052.00

Fire Record 1952, for Acadia National Park, Hancock County

Number	Acreage	Cause	Damage
5	—	4 Smokers 1 Campers	—

Fire Record 1952, for Moosehorn National Wildlife Refuge

Number	Acreage	Cause	Damage
1	2	Smokers	—

NORTHEASTERN FOREST FIRE PROTECTION COMMISSION

Membership in the Compact consists of all New England States and New York. The membership from the State of Maine for both years was:

L. J. Freedman	Governor's representative
Senator Clarence Crosby	Legislature representative
A. D. Nutting, Chairman	Forest fire control representative

Robley M. Evans, with headquarters at Laconia, N. H., was executive secretary until May 1952. A. D. Nutting, chairman of the Compact Commission, acted as executive secretary temporarily from the time of Mr. Evans' resignation until the appointment of A. S. Hopkins, former Director of Lands and Forests for New York State, at the annual meeting in July 1952. Headquarters of the Compact was moved from Laconia, N. H. to Chatham, New York, following the selection of Mr. Hopkins as executive secretary.

In January 1952 Maine sent a team to New Brunswick, Canada, to give their Forest Service personnel Compact large fire training. In return, New Brunswick sent Herbert Johnson, a telephone expert, to participate in Maine's forest fire training.

Maine tried out the Compact equipment aid program in August 1952. A. S. Hopkins, executive secretary, was contacted about 8:00 A. M. and was requested to send 4 pumps and hose to Old Town, Maine. This equipment arrived from New York at the Old Town air field in the early afternoon of the same day. It illustrated how quickly the Compact could move.

The executive secretary made progress in 1952 on a regional forest fire plan.

Austin Wilkins, deputy commissioner, served as chairman of the Compact training team at Laconia, N. H. in 1951 and at Concord, N. H. in 1952. Robert Hutton, Fred Holt, Robert Pendleton, and Willard Wight attended the regional schools in 1951, and the same men, together with Kenneth Hinkley, attended in 1952.

Training has been the outstanding contribution of the Compact. In fact, training may keep the state so well prepared that loaning of personnel and equipment may not be necessary. However, the plan is ready in case it is needed.

INSECT CONTROL

H. B. Peirson, State Entomologist

The division of entomology had its beginning in September of 1921 as the result of an awakening to the tremendous losses resulting from insect attack to Maine's forests which cover over 80% of the land area. 27½ million cords of spruce and fir had been killed by a severe spruce budworm outbreak. The wood lost from this outbreak alone was enough to have supplied our pulp mills for over 20 years. It was evident from the start that a system of insect detection was needed and through the progressive and far-sighted help of Dr. Samuel Dana, who was then forest commissioner, all fire wardens were enlisted to report on insect conditions in their districts. Interest and splendid cooperation from the men was evident from the very start and this has increased over the ensuing years.

The need of a forest type map to show danger spots of insect outbreaks was great. As no such general map existed each warden, with the help of his lookout men, sketched in the principal forest types on base maps furnished them. These were then brought together to form a somewhat crude forest type map of the state. James Beal, later to become Chief of the Federal Division of Forest Insect Investigations, was a great help in the early work and travelled throughout the forest areas instructing fire wardens, checking on insect outbreaks, and carrying on basic research. In 1927, interested individuals made possible the first laboratory located at Bar Harbor where research projects leading to control were instigated. Severe infestations of insects attacking birch aroused timberland interests so that funds were made available in 1929 to greatly strengthen the work and R. W. Nash came with the department, followed two years later by Dr. A. E. Brower, both of whom have leading parts in the entomology work. Further insect outbreaks made possible the building of the Augusta laboratory in 1938 by the Civilian Conservation Corps. Interest in detection work, in control projects, the rearing of parasites, and the protection of shade trees increased each year as people became more aware of the tremendous damage being caused by insects and of the possibility of preventing and controlling these outbreaks. Each year the calls for assistance increase and broaden to cover all types of insects, except agricultural insect problems which are handled by the Maine Agricul-

tural Experiment Station and the State Department of Agriculture. One of the most forward steps came in 1945 with the hiring of 6 forest insect rangers who give their full time from May until November to forest insect detection work. In 1951, a great interest in shade tree protection made possible the appointment of a shade tree specialist who could give his entire time to this phase of insect and disease work.

Organization

The work of this division falls into four general categories: (1) administration which covers the answering of inquiries, office work, the outlining of research and control problems, and supervision of the field work; (2) detection work carried on by the forest insect rangers, fire wardens, timberland owners, arborists, and entomology staff—with this goes the essential laboratory work of identification, rearing, recording, and reporting back to the collectors; (3) research problems in which each member of the staff takes part in working out control and prevention measures and life history studies of important forest and shade tree insects; and (4) control work including spraying, parasite rearing, and advice on cutting of infested trees.

Major Projects

During 1951 and 1952 the division was faced with a number of major problems which are discussed in this report. The spruce budworm situation remains the most serious threat to our forests and the greater part of our field work is concentrated against this insect. The crest of the bronze birch borer outbreak is over and most of the weakened, susceptible trees have either been killed or have started to recover. Methods of preventing and controlling such an outbreak have been worked out. Efforts are now being concentrated on means of bringing birch back through seeding, planting, and better forest management. The killing of such large quantities of both white and yellow birch has increased the market and value of beech which is also facing a critical situation with the severe infestation of beech scale which has moved from Nova Scotia and New Brunswick across Maine. Work against this insect is being carried on. The balsam woolly aphid persists in some sections in being a major pest of balsam fir and in eastern Maine is affecting the Christmas tree business.

The most serious insect enemy of white pine is the white pine weevil. A great deal of work has been done on this problem. The

loss caused by the weevil shows up as a decrease in quality of lumber which is estimated to run close to 40%. Detailed studies are being instigated against this forest enemy.

The forest tent caterpillar is stripping many thousands of acres of poplar in the state and it is hoped to try airplane spraying in the spring of 1953.

The appearance of the dreaded Dutch Elm Disease in southern York County has Maine facing a major problem if our elm shade trees are to be saved. This loss would be a calamity to the state in many ways. It is believed that funds spent in preventive measures will do an effective job even though they may not exceed the interest on what it would cost to remove many thousands of dead elms.

Black flies, mosquitoes, and ticks are major problems being worked on in a continual effort to find better and more economical methods of control.

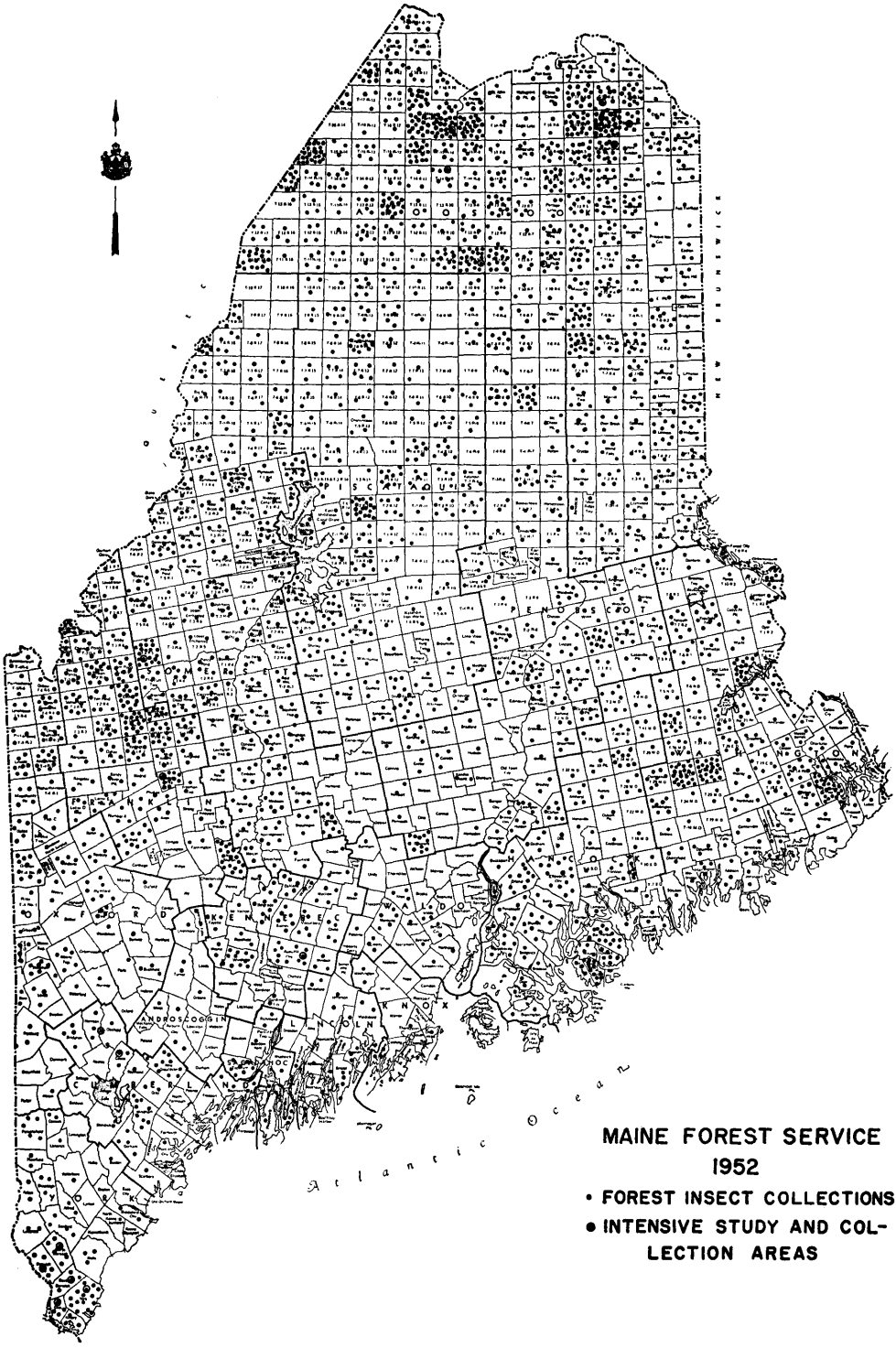
Requests for Information

One of the most important functions of the entomology division is the aid given the general public on insect and disease problems. Each year these calls have grown in numbers and cover a wide range of subjects. It is estimated now that between 3,500 and 4,000 calls are received each year. Some of the calls are about very unusual outbreaks which require considerable time in tracing the source of the trouble down and the working out of specific control measures. Nearly 1,000 calls are received each year in regard to household and other indoor pests. Shade tree insects, which for the most part are closely allied with forest insects, account for a large number of calls. Most of the calls have to be answered by letter, and the printing of bulletins, leaflets, and mimeographs have aided materially in keeping up with the increase in calls.

The division cooperates with a number of municipal health departments in identifying material and with many organizations on the control of pests.

Detection Service

The work of detecting insect outbreaks before they become widespread is now a well recognized factor in forest protection. It is believed that Maine was the first state to start such a sys-


MAINE FOREST SERVICE
1952
• FOREST INSECT COLLECTIONS
• INTENSIVE STUDY AND COLLECTION AREAS
Atlantic Ocean
NEW BRUNSWICK

tem by utilizing its fire warden service. The Maine work was started in 1921. Other states are now setting up similar systems. As the work progressed, forest insect rangers were employed and the collection of insects and the reporting on outbreaks was made a definite part of the fire wardens' work. The licensed tree surgeons of the state and forest workers have also entered into the program. It is believed now that no outbreak of any size will develop without early detection. A school on detection work is held in the spring and fall each year to bring the men up to date and to review the season's work. These meetings have been opened to representatives of the timberland owners and in 1951 22 attended a 2-day session covering the more important tree diseases and insects. Federal entomologists and pathologists discussed some of the topics. Entomologists attended all of the fire warden training schools, giving instructions on insect collecting and reporting.

During 1951 a total of 3,399 collections and reports were received, and in 1952 the tabulation shows 3,207 were received. The drop was due to the fact that many of the men, including the rangers, spent a large part of July fighting forest fires. The following table shows the number of collections and reports received each year since 1945 when the forest insect ranger service was started:

	Collections and Reports made by			
Year	Insect Rangers	Fire Wardens	Others	Total Collections
1945	476	550	86	1,112
1946	655	433	223	1,311
1947	1,348	580	208	2,136
1948	1,555	581	206	2,342
1949	1,350	1,017	307	2,674
1950	1,345	1,081	952	3,378
1951	1,481	1,430	488	3,399
1952	1,651	1,109	447	3,207

Each year considerable territory is scouted from the air and defoliated areas are mapped in. 4 of the 6 rangers now have canoes, 2 of which are aluminum, to help in making carries from one lake to another. It is hoped eventually to equip rangers with much needed trucks. All have pole pruners.

Every warden is equipped with a 6′ x 9′ collecting sheet, mailing tubes, and report blanks. Fire warden collections are made by beating the trees with a long pole so that the insects present will fall onto the sheet spread beneath the tree. The rangers make their more detailed collections by cutting off 25 15-inch twig

samples which are carefully examined for all insects present. In the case of the spruce budworm and forest tent caterpillar, egg mass surveys are made to aid in predicting the infestation for the coming year.

Laboratory Handling of Collections

During the busy season about 35 collections are now received daily. In 1951, these contained an average of 12.4 individuals of 4.87 species per collection. This means that 31,000 insects were received for identification at the laboratory in this 3 months' period or at the rate of nearly 1 per minute.

The cans containing the collections are sorted into ranger, warden, and other series; and the insects removed and divided into groups for naming and recording. All field report blanks are given a consecutive number in the appropriate series, dated time of receipt, and checked for food plant, number, kind of tree, collector's name, etc. The insects, plant galls, or other diseased material are separated into groups in preparation for identification. Identifications are made in a systematic manner both to insure completeness and to facilitate recording. A great many species which can be given only family or group common names for report to the collector are fully identified by their technical Latin names for the laboratory record. These are all taken off and compiled on a systematic basis. Insects which are needed for the collection are mounted and later labelled. Larvae for inflating are set aside, and those for rearing checked as to food and method of handling in preparation for rearing. (A. E. Brower).

Insect Rearing at the Laboratory

Since the establishment of the Forest Service laboratory insect rearing has been carried on. In fact, one of the principal functions of the laboratory has been the rearing of specific parasites to combat specific forest insects that have developed to epidemic stages. More or less rearing of other insects has also been carried on. However, it is only during the last 4 years that it has been possible to assign this general rearing to one member of the laboratory staff with more time allowed for the work, and hence made it possible to keep more records and compile data on the findings. For this reason, it is possible for the first time to include a report on this phase of the work carried on at the laboratory.

Some of the principal objectives of this rearing are: (1) to obtain information on the biology of insects; (2) to obtain informa-

tion on parasites of insects, particularly those in which there is a special interest such as the spruce budworm, arborvitae leaf miner, and balsam woolly aphid; (3) to secure good insect specimens for the laboratory; and (4) to obtain positive identification of insects to species, particularly where larval stages are difficult to positively identify.

The groups of insects most commonly reared are moths, sawflies, false sawflies, syrphid flies, and beetles, in the order listed. Below is a table summarizing the general rearing work that has been done over the last 4 years:

Year	No. lots insect received at laboratory	No. lots from which specimens used for rearing	No. rearing lots producing adults	No. individual specimens produced	No. different species produced (excluding parasites)	% of lots producing adults
1949...	2,035	615	228	758	60	40.0+
1950...	2,345	765	368	1,110	75	48.6+
1951...	2,638	462	128	373	53	27.7+
*1952...	2,316	419	96	212	33	22.9+

*Data complete only to December 1, 1952

In studying this table questions that might quickly arise are: Why the drop in number of lots from which specimens were used for rearing, and the drop in the percentage of lots producing adults in 1951 and 1952 over the previous 2 years. There are 2 answers to the first question. The first is that because of the increase in the numbers of lots of insects received at the laboratory, more work was entailed in processing them; hence leaving less time for rearing. The second is that in 1949 and 1950 many more spruce budworms were included in the lots received at the laboratory and were set aside for rearing to get data on numbers and species of native parasites attacking the spruce budworm. The answer to the second question is that generally rearing lots contain only a few individual insects, in the majority of cases not more than one individual, while the lots of spruce budworms reared in 1949 and 1950 contained from 1 to as many as 80 individuals. It can be readily understood that a lot containing a large number of individuals is far more likely to produce adults than a lot containing only 1 individual, which was the case.

In 1949 and 1950 when the arborvitae leaf miner was so abundant, many large lots were caged to secure adult specimens and their parasites for study, and for the laboratory insect collection. In 1951 and 1952 a number of lots of bark from fir trees infested with balsam woolly aphid were caged for the purpose of follow-

ing the natural spread of *Leucopis obscura,* Hal. from Canada into and across Maine. This insect is a predatory fly of the balsam woolly aphid and was introduced into New Brunswick from Europe in 1933 to help control this pest. There is also a native species of Leucopis which we have hoped to obtain by these methods, but to date we have been unsuccessful.

Probably one of the most significant results obtained from this work over the past 4 years has been the securing of at least 15 different species of native parasites of spruce budworm, 10 of which are hymenoptera and 5 are diptera. (H. E. Bell)

Research and Survey Projects

The picture of insect infestation changes every year. This is brought about by the change in forest and cultural areas due to the influence of man and climate and the introduction of new pests through commerce and transportation. The result is that entomologists must be alert as to these changes and be in a position to use the very latest means of control. New chemicals and new machines for applying them are continually being involved. What may work in one section of the country where climatic and other conditions are entirely different may not work in Maine. It is, therefore, essential to continually carry on experimental control projects with new insecticides, new methods of application, and better methods of forest management.

In all of the major spray projects the wildlife division of the Department of Inland Fisheries and Game is invited to participate so as to be sure that no material damage is done to fish and game. Enthusiastic bird lovers have at times felt that a lack of birds was due to spraying. In one case no spraying had been done, as far as could be determined, within 50 miles. In some cases, birds which had been feeding on heavily insect-infested trees merely had migrated temporarily into unsprayed areas.

Definite work is being done on the following listed projects in the way of life history studies, the checking of over 200 sample plots, yearly surveys, spraying and other control measures, forest management, or plantings.

Arborvitae Leaf Miners *(Argyresthia sps. and Recurvaria thujaella).* Tests in 1951 for control of arborvitae (cedar) leaf miners by airplane spraying showed DDT 12% emulsion as the only tested material giving any sort of satisfactory control. This

was at a rate of 2 pounds DDT in 2 gallons emulsion per acre on June 22. Since airplane spraying is necessarily directed at the start of a new generation of the insects, evaluation of results is extremely difficult. A further complication was that a natural lessening in infestation simultaneously occurred in the sprayed areas. For these reasons a series of further tests must be made before it can be said that such a spray can be relied upon.

Airplane spraying with 1 pound emulsion per acre of either DDT or Chlordane gave unsatisfactory results, the same as they did in 1950. Combined results of 1950 and 1951 tests indicated the possible effectiveness of 1 pound DDT in more carrier, e.g. in 2 gallons emulsion per acre. Airplane sprays were designed to kill the moths before eggs are laid and to kill newly hatching larvae.

Ground spraying tests by so-called mist blower machine were also made in 1951 with Chlordane and Benzene Hexachloride the last of July to kill larvae after they had started mining. Results were unsatisfactory. These tests were made to test possible airplane applications and to find cheaper controls for ornamentals and hedges than now used. Mist blower tests of DDT in June 1950 were very effective but cannot be recommended due to the resulting, severely-injurious effect by increased red spider populations. The standard recommendation for ornamentals is nicotine sulphate 1 part to 400 parts of water (2-2½ teaspoonfuls per gallon of water to which enough soap is added to make a sudsy solution). The spray should be applied particularly to the lower surfaces of the foliage about July 15 to 20 in central Maine. In severe infestations an additional spray about 20 days earlier is recommended.

Arborvitae leaf miner infestations normally involve 2 to 4 different species of insects, all of which are moths as adults and have 1 generation annually. The moths fly from late May through the larger part of July and lay eggs upon the foliage. Larvae, upon hatching, mine inside the foliage and its central stems, causing a prominent browning. Infestations have been very high in recent years over south-central Maine and are common in most cedar areas, causing severe defoliation of arborvitae and great concern to woods owners. While there has been a gradual, annual extension of infestations, those of oldest duration are dropping off due to control by parasites and other natural factors. For example, in 3 different stands in the vicinity of

Newport sampling of populations in December of 1950 and of 1951 showed in each case approximately 88% less of an infestation in 1951.

In 1952 the infestation declined even further and it was only in relatively small isolated areas that browned stands could be found. (Brower and Nash)

Balsam Woolly Aphid *(Adelges picea)*. A great deal of balsam fir has been killed particularly in eastern Maine and along the coast by this European insect. There are 2 distinct types of damage. Along the coast the twig or bud phase resulting in swollen and destroyed buds is most frequent. Inland the trunk phase, in which whitish masses of the cottony covered insects appear on the trunks of trees, is most prevalent. Damage to older trees in eastern Maine and along the coast seems to have subsided, whereas there is a decided build-up in the area south of Sebec Lake in central Maine. In eastern Maine along the coast, damage is showing up on smaller fir up to Christmas tree size. Although planned cutting is a satisfactory control, it is hoped in the spring of 1952 to continue spray experiments which so far have been limited to individual trees.

Beech Scale *(Cryptococcus fagi)* and **Nectria Disease.** This insect is now found in an area covering nearly 80% of the state. It is rather spotty in its presence and abundance in the western part of the state and is absent in the far northwestern parts. Nectria now occurs in nearly 70% of the scale infested area.

Severe damage and killing has taken place in the eastern half of Maine. There is considerable beech that has recovered from past infestations of these 2 organisms, but the majority is pitted badly with cankers and has low market value. Nectria continues its damage there but actual scale infestations are light which retards activity of the disease.

In western Maine heavy scale infestations are spreading but are rather spotty. Light infestations are increasing. Nectria is more limited so that actual damage is still slight. Severe damage has been taking place, however, in east-central New Hampshire, roughly across the state line north of Fryeburg. It is reported, however, to have dropped considerably in 1952 in abundance and amount of killing.

In 1950 26 permanent sample plots of 25 trees each were established over the state in stands of all ages. These were de-

signed to measure, every 3 to 5 years, the general rate of development of infestations and distribution over trees. It was, thereafter, decided that more exact information was also needed on the annual increases of these organisms and amount of damage in second growth stands of western Maine where damage was still light. Information was also thought necessary on effects of thinning on scale populations. Accordingly 6 plots of 25 trees each were established for this information in the fall of 1951 and 9 in the fall of 1952 between Augusta and the New Hampshire boundary in second growth or recently cut stands. In the latter year a plot established in 1950 in Hersey (northern Maine) was made over to give 16 of the newer type plots. All pertinent information was recorded as to stand and tree conditions in the plots. Trees were numbered with paint, and pertinent general data on scale and nectria were taken. The 5 trees having the most scale and nectria, or scale if the latter were not present, were then selected. 2 3-inch high bands around these trees were then delineated with paint. One band was 1 to 2 feet above ground, the other 5 to 6 feet. Each band was then quartered, again with paint lines, into the 4 cardinal points of the compass. Records were then taken of the percentage of bark surface occupied by the scale and nectria in each of the "quarters."

The following table for the 6 plots established in 1951 shows that there was an increase of scale on all plots in 1952 and in nectria on the 1 plot having it. It is also shown that this increase in scale was greater in the bands 5 to 6 feet above ground than in the lower bands, except in plot F. No change in 1952 was apparent in crown condition of the trees:

Average beech scale and nectria on five most heavily infested trees in six plots, western Maine

Plot Number and Type*	% bark surface occupied by scale						% bark surface occupied by nectria					
	1-2′ up on bole			5-6′ up on bole			1-2′ up on bole			5-6′ up on bole		
	1951	1952	% Increase	1951	1952	% Increase	1951	1952	% Increase	1951	1952	% Increase
A-S Waterford..	0.45	5.70	5.25	0.35	8.00	7.65						
B-S Waterford..	0.30	5.35	5.05	0.50	9.15	8.65						
C-C Norway....	6.55	8.25	1.70	7.75	15.75	8.00	0.05	0.20	0.15			
D-S Norway....	6.30	7.00	0.70	10.65	16.25	5.60						
E-S Stoneham..	2.10	8.30	6.20	1.90	10.20	8.30						
F-C Stoneham..	0.80	5.15	4.35	0.45	3.30	2.85						

*Type of stand: S—second growth, C—cut partially

The data shows that scale in the earlier stages of infestations is usually heavier on some northern exposure of the trees. For example, the exposures having heaviest to least scale in that order were as follows:

1951—Lower bands—N. E. S. W. 1952—Lower bands—N. E. W. S.
Upper bands—N E. S. W. Upper bands—N. W. E. S.

It has been known for some time that a dormant lime-sulphur spray would give good control of the beech scale. It was desirable to see if some other spray could be used in concentrated form during the growing season of trees. A concentrated suspension spray was prepared using DDT, 1 pound 50% wettable powder per gallon of water. 4 gallons of spray per acre were applied by mist blower machine to give an application of 2 pounds actual DDT per acre. This was done on June 21 on a 2-acre block in Belgrade having heavily infested trees. A check of results showed poor kill. Results in other places on similar insects suggest that Lindane might give summer control of the beech scale and that it should be tried. (Nash and LaBonte)

Bronze Birch Borer *(Agrilus anxius)* **and Birch Studies.** The work started on this major problem has been continued during this biennium. Bulletin 15 of June 1951 gave a detailed report of the work through 1950 and should be consulted by anyone desiring more details on items reported here. Chief fire wardens estimated that 67% of the birch had been killed through 1950. Since that time further estimates have not been requested as it was believed that major death had taken place. This figure is applicable for the state in general. The lower figure for percentage of death in Table 1 applies to plot trees only. While it is, of course, an exact figure, it naturally applies to limited areas only and includes young, lightly damaged study areas. The large scale death of birch, in addition to the direct loss, has caused a secondary hazard in relation to travel, mopping-up work, and lightning strikes in fire suppression activities.

The permanent sample birch plots involving nearly 2,200 trees showed little improvement in the general condition of birch in 1951 but a general improvement in 1952. Table 1 gives the detailed figures:

TABLE 1

Year*	Percentage of 2,183 trees having						Numerical Rating for all Trees
	Damage	Severe Damage	Death	Increased Injury	Same Condition	Improved Condition	
1950....	62.5	43.7	25.7	10.6	83.2	6.2	3,488
1951....	63.1	45.0	27.4	12.1	81.5	6.4	3,569
1952....	60.7	47.4	29.6	8.2	83.4	8.4	3,615

*Figures for a nine-year period are given in Bulletin 15.

In 1951 those showing "increased injury" and those an "improved condition" were both slightly more than in 1950. The deduction was that one offsets the other. In 1952 the figures show a general improvement. The numerical rating is another way of judging the yearly trend in birch damage. Although a yearly increase has taken place, it is on the other hand tapering off. With the rating of 3.2 in 1949 it can be seen that the increase in 1950 was 0.28, in 1951 only 0.081, and in 1952 down to 0.046. This rating is expected to increase for a few years since many of the trees severely damaged have been beyond recovery and have continued to get worse or to die. In fact, diagnosis of the detailed figures shows that by far the highest percentage of trees showing increased injury is with those in the classification 4B (trees with only trunk or water sprouts left), and next those classed as 4A (over one-half of the crown dead) the previous year. Questioning the forest insect rangers and chief forest fire wardens and woods operators in 1952 revealed that they thought general improvement in birch throughout the state has been taking place except for one or two localized areas in Aroostook County. The birch supply is holding up somewhat better than they formerly judged it would. This probably arises from the fact that many trees in stands which they thought were doomed have managed to survive or improve, and that they can operate under conditions which they formerly thought were not economical.

A higher percentage of trees showed improvement and a smaller percentage showed increased injury in the older afflicted areas of eastern Maine than in western Maine. There were less trees in 1951 (96) than in 1950 (116), and even less in 1952 (51) showing increases in injury of more than one step in the arbitrary injury-classification system used. Other encouraging signs are that the bronze birch borer is becoming increasingly more difficult to find; and attack on normal, healthy trees is now lacking.

In the past two years the suppressed trees of both species have shown the highest percentages of increase in death, injury, excessive jumps in injury, and the least in improvement. The intermediate trees, particularly with yellow birch, have shown the least increase in injury and have been close to the top in improvement. Death of yellow birch exceeds that of white birch in the dominant and codominant classes, but is less than that of white birch in the intermediate and particularly the suppressed classes.

This suppressed-class feature reflects evidently the tolerance of yellow birch compared to white and no doubt its better ability to withstand adverse conditions.

For all plot trees to date since the study began in the early 1940's, there has been only 1.4% more death of yellow than of white birch. However, there has been a somewhat higher percentage (15.4%) of yellow birch showing severe damage, and there were 4.0% and 6.6% more yellow birch showing increased injury from 1950-51 and 1951-52 respectively.

Plot trees which were infected with the shoe-string fungus *(Armillaria mellea Fr.)* increased from .5% in 1950 to .8% in 1951, to 1.1% in 1952. Ordinarily trees which change from a fairly good condition one year to a poor condition or death the following year warrant inspection for presence of this fungus.

Analysis of 230 increment cores showed gains in increment in 1951 over 1950 of 14% for yellow and 21% for white birch with no change for either species in 1952. The plot trees showed improvement in 1952, although there were severe drought conditions in July and August following a wet May and June. The more tangible improvement that had been expected with the above-normal precipitation of 1951 did not show up in the plot trees. A possible explanation observed was that all hardwood species by mid-summer of 1951 were in many cases off-color while abnormal numbers assumed fall colorations.

Spraying. At Salem spraying by mist blower of a 6-acre stand of white birch with DDT emulsion at the rate of 5 pounds in 5 gallons per acre as done in the past was continued both years. In 1951 the sprayed area showed a considerable number of trees improving, whereas the reverse was true in the unsprayed area. In 1952 there was no significant differences as negligible increases took place in both sprayed and unsprayed plots, although on the sprayed area a considerable number of trees improved. The latter could be logically expected since the sprayed area had been sprayed in previous years and was in much healthier condition.

In the Eustis area 1 pound of DDT in 1 gallon of emulsion per acre by airplane application was tried each year. These were the first times such a light dosage had been tried to learn of its possibilities for lowering expense under field conditions. In the past, laboratory tests had indicated it would not be of benefit. In 1951 results were inconclusive, while in 1952 results for sprayed and

unsprayed plot trees ran practically the same. The spraying in the Eustis area, as well as at Salem, lent credence to the previous belief that 1952 would be the last year for any chance of getting results from spraying due to the facts that general improvement of birch has been taking place over the state and that the bronze birch borer infestation has been decreasing so much.

In areas nearby to the 1 pound application, but part of the same general stand, records were again taken of plots that had been sprayed in 1949 and 1950 (with 2, 3, and 5 pounds DDT per acre) to see what was happening following discontinuance of spraying. The check area was a common one for all spray plots. In general, the plots that had been sprayed in the past with effective results showed this year more trees with increased injury and fewer improved than did the unsprayed plots. A probable explanation of this is that in the unsprayed plot the weak, susceptible trees were previously severely damaged or killed whereas they were not in the sprayed areas. The increase in injury in the sprayed areas has not progressed to death. It will be worth following these further to see if such does occur.

Seeding. Experimental work on sowing of white and yellow birch seeds was initiated in the fall of 1949 and has been continued since. Work was done in old fields in which 5 strips were laid out and treated in different manners, as listed in the following Table 2:

TABLE 2
MORTALITY AND GROWTH OF 4,647 BIRCH SEEDLINGS IN 1951 AND IN 1952, NORWAY

	White Birch												Yellow Birch							
	Results by fall 1951						Increases during 1952						Results by fall 1951				Increases during 1952			
Sod	% Mortality			Av. Growth in.*			% Mortality			Av. Growth in.*			% Mortality		Av. Growth in.*		% Mortality		Av. Growth in.*	
Treatment	1-0	2-0	1-0 & 2-0	1-0	2-0	1-0 & 2-0	1-0	2-0	1-0 & 2-0	1-0	2-0	1-0 & 2-0	1-0	2-0	1-0	2-0	1-0	2-0	1-0	2-0
	Planted fall 1950—1,292 trees (507 1-0, 785 2-0)												Planted fall 1950—250 trees (1-0)							
Bulldozed	84	54	66	3.1	-4.1	-2.8**	2	2	2	4.8	2.9	3.2	96		2.8		2		1.0	
Plowed	61	70	62	8.4	-2.0	2.6	5	9	8	4.0	4.4	4.2	76		2.6		4		6.4	
Harrowed	6	30	20	2.7	-2.8	-0.2	43	56	51	3.3	2.5	3.1	24		0.8		48		1.0	
Plowed & Harrowed	73	46	57	9.3	-1.2	2.6	13	48	34	4.8	4.1	4.5	88		1.7		8		9.8	
Untreated	43	34	38	3.1	-0.5	0.8	32	42	38	3.4	1.7	2.4	42		0.8		26		3.3	
	Planted spring 1951—2,549 trees (518 1-0, 2,031 2-0)												Planted spring 1951—556 trees (2-0)							
Bulldozed	44	10	15	2.4	2.2	2.0	9	4	5	3.4	2.0	2.1		17		1.7		9		2.6
Plowed	44	6	13	6.4	2.4	2.8	10	9	9	6.2	3.4	3.7		0		2.2		35		4.3
Harrowed	68	33	41	2.7	.03	0.4	19	34	31	3.5	1.0	1.3		39		0.8		53		2.6
Plowed & Harrowed	24	3	8	6.4	2.2	3.0	42	34	36	3.7	3.3	3.4		9		4.5		86		-1.0
Untreated	74	54	59	5.9	0.2	1.0	15	39	33	3.4	1.8	2.3		52		1.3		42		3.3

*Average growth is of those trees that survived.
**Net loss in seedling heights as shown is due to dying back following planting.

A number of plots, 20′ x 30′, each separated by a space of 5 feet were then laid out. Seeding on each plot varied as to seed treatment and time of year as listed in Table 3:

TABLE 3
1950-51 Seeding Tests. Bulldozed Strip, Norway

Results by	Species	Sowing Dates	Method of seed handling. Number of seedlings found				
			As Collected	Dried Well in Trays	Closed Cans	Strat-ified	Cold Water
Fall 1951	White Birch	Nov. 1	2,550				
		Nov. 28		6,625			
		Jan. 3*		385	400		
		Mar. 1*		200	800		
		May 1		5,150			3,600
		May 14				1,685	
Fall 1952	White Birch	Nov. 1	2,350				
		Nov. 28		5,100			
		Jan 3*		475	425		
		Mar. 1*		525	375		
		May 1		275			700
		May 14				25	
Fall 1951	Yellow Birch	Mar. 1*		1,600			
		May 1		1,500			2,000
		May 14				1,250	
Fall 1952	Yellow Birch	Mar. 1*		750			
		May 1		800			125
		May 14				350	

*Sown on snow during a snow storm.

By the fall of 1952 - white birch tallest seedling 16″, average 7″; yellow birch tallest seedling 17″, average 5″.

In the following account wherever the term, such as 1950-51 tests, occurs it means tests with seeds collected in the fall of 1950 and planted in the fall, winter, and spring of 1950-51.

The first tests of 1949-50 at Albany, in a field of Arthur McKeen of Norway, were unsuccessful due to severe drought in the spring and summer and to poor quality of seeds.

1950-51 tests were made on a field of Jack Heath in Norway, using 2 quarts of seed, uncleaned of strobile scales, mixed with 1 quart of sand per plot. Table 3 gives the results after the first and second growing seasons and should be referred to for the following statements. Seedling numbers were obtained by making counts in 6 random 2′ x 2′ samples and by ratio figuring the numbers that should occur on the whole plot of 20′ x 30′. The samples were random each year which would account for such in-

crease as shown for white birch, March 1. By the fall of 1951 good numbers were found on the bulldozed, plowed, and plowed-and-harrowed strips, very few on the harrowed strip, and none on the untreated strip. Raking after sowing to lightly cover seeds gave no apparent benefit. By the fall of 1952 seedling survival occurred only on the bulldozed strip and a small section of the plowed strip where there was a little or no grass competition. The reason results in the former strip only are given in Table 3 is that survival in the plowed plots was almost entirely limited to the last furrow, figures for which would not be representative of each entire plowed plot. Actually there was good survival in the last furrows—sufficient to indicate that the plowing of furrows at regular intervals would be better than plowing the whole surface. This method has been used since. Fall and winter sowing of seeds gave better results in germination and survival than the spring sowings, especially the fall sowings which had an average of 6 seedlings per square foot after the 1952 season. Such better survival is brought out in Table 4 which is a tabulation of actual counts made on small areas set apart and checked in 1951 and in 1952:

TABLE 4

Survival Checks on Tests in Table 3

Sowing Dates	Species	Number of Seedlings—Fall		% Survival 1952
		1951	1952	
Fall	White Birch	49	41	84
Fall	White Birch	30	32	100
Winter	White Birch	24	19	79
Spring	White Birch	80	6	8
Spring	White Birch	62	20	32
Spring	Yellow Birch	30	2	7

Very late germination resulted from the spring sowings since no seedlings of either species appeared until August so that by fall these were all very small—no more than ¼ inch tall. They did not survive. Numerous similar small seedlings occurred also in the plots sown in fall and winter. A great variance in height of wild, current-year seedlings in woodlands was found in the fall with many of tiny size. This occurrence is apparently natural with both birches.

As with white birch, yellow birch seedlings did not survive in areas of heavy grass competition which occurred on the untreated-strip plots nor on the plots in harrowed and plowed-and-

harrowed strips. Breakage of the sod-covering actually resulted in thicker growth than on the untreated strip.

1951-52 tests in a field supplied by Cecil Farrington at Weeks Mills were established to determine what deviations, if any, from 1950-51 tests might occur in a similar test, as well as what other factors might influence results. Furrows were made 3 feet apart for these tests instead of plowing. 1 quart of seed mixed with 1 quart of sand was applied to each plot. 1 set of plots was sown with seed held over from the 1950 season because of their high germination quality. Otherwise things were done as in the first tests. Results were generally poor. Those of any consequence were only with the old or 1950 white birch seeds sown in winter on plots in the bulldozed strip, and winter and spring sowings of yellow birch in the furrowed strip. These spring sowings were with stratified seeds and with those soaked in cold water, the latter giving much better results. The poor success was apparently due to the same reasons as for the 1949-50 tests at Albany; namely, severe drought during the summer of 1952 and the poor quality of the 1951 seed crop. In early summer examination showed many seedlings, but when detailed data was taken in the early fall, many plots showed no seedlings. It is of interest to note that the Western Maine Forest Nursery, which made large plantings of the same 1951 crop of seeds in 1952 for us, had total loss of young seedlings in all but 1 bed. They assumed the reason was due to very intense sunshine quickly following a rainy period. It might also have been due to poor seeds.

1952-53 tests have been started in a field supplied by Paul Johnson of Weeks Mills. The only sod-treatment was that of making furrows 5 feet apart. Fall and winter sowings already made will be followed by spring 1953 sowings. In addition to these tests a recent heavily-cut area and a July 1952 burned area, both in Weeks Mills, were obtained for tests. Sowings were made in the fall and will be duplicated in the spring. Soil treatments of spots 1 foot square varied as follows: soil disturbed or not disturbed, seeded or not seeded, raked or not raked following seeding. Seeds of black birch from Brownfield are also being used in the 1952-53 tests to determine the possibilities of establishing this species in areas north of its natural range which extends into southern Maine.

During the work the quantity and especially the quality of birch seeds has assumed considerable importance. From litera-

ture it seemed apparent that good crops of white birch seed could be expected about every year; that germination averaged rather low, somewhere around 30%; and that one had to be very careful in the storage of seed, with the moisture content being held down to 1%. Experiences so far differ somewhat from these ideas. See Table 5 and the account of 1951-52 sowing tests:

TABLE 5
Quantity and Quality of Birch Seeds 1948—1951

Crop Year	Test Year	Quantity	Percentage Germination (average by various methods)	
			White Birch	Yellow Birch
1948	1949	Low	7.5	
1948	1950		7.5	
1948	1952		2.0	
1949	1950	High	25.5	
1950	1951	Very High	73.0	
1950	1952		63.0	
1951	1952	Low	15.0	
1949	1950	High		9.5
1950	1951	Very High		71.0
1950	1952			74.5
1951	1952	Medium		24.0

All seeds dried well in cellar, 60° and 38% humidity, for 4 months, then stored in tight cans in attic-hot in summer; cold in winter.

Seed collections have been made from widely separated points in the state so that they represent a fair cross section of conditions. Variances have been so great so far that records should be obtained over a period of years.

As a summary of the seeding tests it is apparent that results have been poor but it is definitely believed that severe climatic conditions and poor seed have been such that further tests are warranted. Conclusions are that for old field work it is most practical to plant in furrows spaced rather regularly at 6 feet with sowings in fall or during snow in early winter. Germination quality of seeds should be checked before use. With some experience visual inspection should give a fair estimate.

Planting of Seedlings. At a 1948 meeting of the Maine Hardwood Association a cooperative agreement was reached with Messrs. Harold and Harry Eastman of the Western Maine Forest Nursery, Fryeburg, whereby the latter would propogate birch seedlings if the state furnished seeds. The purpose was to learn what could be done in the way of reforesting abandoned lands

with birch. Since the spring of 1949 they have contributed greatly to the project by growing all seedlings used in the following tests and are still doing so. In addition to the native birch, they have also generously contributed in 1951 by planting small quantities of seeds of 3 exotic birches: *Betula maximowicziana, B. japonica mandschurica,* and *B. japonica szechuanica.* The first is a Russian white birch which has grown well in the Cleveland, Ohio area and has been supposedly rather free from bronze birch borer attack. Seeds were obtained from that area. Dr. Jesse Diller, Division of Forest Pathology, U. S. Department of Agriculture, in knowing of Maine's birch troubles took interest enough to collect some seeds of the last 2 Chinese varieties. These trees on the George Washington National Forest, Virginia, had grown as much as 4-6 inches D.B.H. and 25-40 feet in height in 17 years, which made them seem worth trying in Maine. Seedlings of all 3 will be 2 years old this coming spring and will be set out in suitable locations.

The first plantings of white and yellow birch seedlings were made in Norway on part of the same field strips as used for the 1950-51 seeding tests. Tabulation of all data appears in Table 2. It is apparent that spring plantings of 2-0 stock on either bulldozed or plowed strips gave the best results. Other features are: (1) high initial mortality of fall plantings was undoubtedly caused by unusually severe, warm rains accompanied by gale winds of November 1950 and the early spring of 1951—this is evidently reflected in the definitely lower fall-planting mortalities in the harrowed, and untreated strips where wash would be less; (2) the great increases in mortality the second year in the harrowed, plowed and harrowed, and untreated strips where much more grass occurred than in the other strips was due mainly to girdling by field mice which were feeding on at least some seedlings in the apparently unusual time of late summer and early fall; and (3) 1-0 seedlings gave much better growth than did 2-0, the drawback being their much higher mortality.

Further plantings were made on part of the same field strips at Weeks Mills as used for the 1951-52 seeding tests. The so-called "plowed" strips of 1950-51 were replaced by "furrowed" strips made by single furrows every 3-4 feet apart. Seedlings were inserted into the ground with a planting spade, except in the furrowed strip they were laid against the straight side of the furrow. Roots were then covered by pulling and mounding soil

over them. In each strip there were 7 rows planted. All were to birch except the interior 2 rows, each of which were planted alternately to white birch and white pine to test the future growth of these 2 species together and the relative protection afforded the pine from white pine weevil attack. This was decided upon during conversation with members of the New Haven, Conn. office of the Division of Forest Insect Investigations, U. S. Department of Agriculture, and Harold Eastman, of Fryeburg, who supplied the white pine seedlings.

Table 6 shows that plantings in the furrowed strip gave the best results:

TABLE 6

Mortality and Growth of Planted White Birch and White Pine after 1 (1952) Growing Season, Weeks Mills

Sod Treatment	White Birch (2—0)				White Pine (2—2)	
	Planted fall 1951 623 trees		Planted spring 1952 2,369 trees		Planted spring 1952 521 trees	
	% Mortality	Av. Growth in.*	% Mortality	Av. Growth in.*	% Mortality	Av. Growth in.*
Bulldozed	24	—1.3**	41	1.2	7	1.4
Furrowed	29	—1.3	33	1.8	11	1.5
Harrowed	66	—3.0	76	1.4	44	1.2
Plowed & Harrowed	46	—3.1	51	1.1	17	1.4
Untreated	85	—4.2	95	1.4	74	1.1

*Average growth is of those trees that survived.

**Net loss in seedling heights as shown is due to dying back following planting.

Other features are: (1) mortality was higher in the spring, in reverse to the Norway results, apparently due to the severe drought of 1952—the fall planting may have been able to start growth quicker and become better established before the drought than the spring plantings; and (2) the general, high, pine mortalities apparently bear out the effect of such an adverse factor as the 1952 drought.

An additional test at Weeks Mills consisted of clipping 219 white birch seedlings 1 to 2 inches above ground in the spring of 1952 to see if the resulting sprout growth would be better than growth on unclipped seedlings. Both tests of clipped seedlings gave better height growth. About the same mortality occurred on spring, bulldozed plantings as with unclipped seedlings. This is shown in Table 7.

TABLE 7

Seedling Treatment	Fall planting, soil untreated		Spring planting, soil bulldozed	
	% Mortality	Av. ht. growth inches	% Mortality	Av. ht. growth inches
Clipped	93.4	4.5	39.8	3.1
Unclipped	85.0	—4.2	41.0	1.2

The Mallory Farms at Farmington did considerable planting in furrows of 2-0 birch seedlings obtained from the Western Maine Forest Nursery in the fall of 1950. The work was done in cooperation with farm foresters Morris Wing and Sumner Burgess of Dixfield. Mortality ran about 20% by the fall of 1951 and only a little higher by the fall of 1952. Height growth was good. Planting was done in the manner described for furrows in the Weeks Mills tests.

In addition to the preparations for 1952-53 seeding tests already described, a 1-acre area in the same field has been prepared for spring 1953 planting tests. Furrows 5 to 6 feet apart have been made. Half of these will be planted alternately as rows of white birch and white pine. The other half will be planted alternately within each furrow. The purpose is to test success of these 2 species together and the effect on reducing white pine weevil damage.

Summary of all the planting work to date shows best results with plantings of 2-0 seedlings in the spring on plowed or furrowed land. The lesser expense of preparation of fields and time in planting would favor the furrowed method. Results on bulldozed land were nearly as good but, here again, expense compared to furrowing land would rule it out. More time and tests should pass before definitely judging any methods.

Reproduction on Burned Areas. Following the extensive fires of the fall of 1947 in southern Maine, it was noted that appreciable areas were reproducing abundantly to white birch. Considerable discussion ensued as to whether white birch would produce desirable crop trees in such southern as well as sandy-soiled areas. Some believed that it would be slow-growing, short-bodied, and high in red heart at maturity. In the fall of 1952 intensive data were taken in the area as to the quantity and quality of both white birch reproduction in the burned areas and mature white birch in adjacent stands. A short paper of the conclusions and substantiating data was prepared. The quality of birch re-

production compared favorably with the average for burned-over areas after 5 years growth. Mature trees likewise were good average birch. They tended to be a little shorter-bodied than usual for mixed growth stands but otherwise compared well with birch from other sections as to quality of wood and, particularly, amount of red heart. It was concluded that white birch should be considered a desirable tree in the area and that it would produce crops near the average of that from the rest of Maine.

Sprouting from Stumps. Observations in cuttings of white birch have been continued as initiated in 1947 in order to learn of the probabilities of reestablishment of stands by sprout growth. The results to date in 4 different areas of average cutting age are given in Table 8:

TABLE 8
Sprouting of 361 White Birch Stumps, Cut in 1947, Through 1952
By height of stumps and crown condition of original tree

Height of Stumps	Number of Stumps	Percentage of stumps showing					
		Alive, Vigorous Sprouting	Alive, non-vigorous Sprouting	*Vigorous Sprouts all dead	*Non-Vigorous Sprouts all dead	Never Sprouted	Severe** Deer Browsing
Ground—6"	110	11.8	.9	51.8	22.7	12.7	—
6"—1'	130	21.5	2.3	36.9	18.5	20.8	—
1'—2'	121	11.6	1.7	36.4	21.5	28.9	—
Total	361	15.2	1.7	41.3	20.8	21.0	64#
Crown Condition##							
1	91	16.5	2.2	38.5	24.2	18.7	—
2	109	20.2	1.8	43.1	21.1	13.8	—
3	83	12.0	1.2	36.1	25.3	25.3	—
4	73	10.9	1.4	50.1	12.3	24.6	—
5	5	.0	.0	.0	.0	100.0	—
Total	361	15.2	1.7	41.3	20.8	21.0	

*Original condition.
#No increase in 1952.
**Every sprout group has had some browsing, except those protected by brush.
##Crown condition classifications here were #1—Tree healthy; #2—Top twigs dead; #3—Branches dead in top up to ½ of crown; #4—Over ½ of crown dead; #5—Dead.

Table 9 gives the results to date in a cutting of younger trees —38 to 40 years old:

TABLE 9
Sprouting of 105 White Birch Stumps, Cut Winter of 1949-50, Through 1952

Tree Condition Before Cut*	Number of Stumps	Percentage of stumps showing					
		Alive Vigorous Sprouting	Alive, Non-vigorous Sprouting	Vigorous Sprouts all dead	Non-Vigorous Sprouts all dead	Never Sprouted	Severe Deer Browsing
A	41	7.3	.0	61.0	19.5	12.2	—
B	47	8.5	2.1	44.7	21.3	23.4	—
C	17	11.8	11.8	47.0	.0	29.4	—
Totals	105	8.6	2.9	51.4	17.1	20.0	55.2**

*A—Apparently fast growing. B—Apparently slow growing. C—Stumps with decay or with appearance of decline in original trees.
** 1% increase in 1952.

These were not included with those in Table 8 not only because of their younger age but also because the cutting was in a later year, winter of 1949-50, and stumps were tallied differently. In this case they were examined after the cut and were divided into 3 groups separated as to apparent growth condition of the trees before being cut as judged from the appearance and size of each stump.

Table 8 indicates that the better sprouts have resulted from stumps ½-1 foot in height from trees in #1 and #2, the better, conditions. Table 8 should be a better criterion because the conditions for trees tabulated therein were taken before cutting. Production and survival of sprouts is shown to be very low. One plot of 106 stumps, however, shows the fair survival of 41.5%, the same as in 1951, with 26% never having produced sprouts and 32% having had sprouts that died. These sprouts are growing vigorously and should form a fair part of the future stand. The plot was in a severe cut of mixed hardwoods. Sprout growth of all species combined has made a thick growth among which are such heavy-wooded species as beech and oak. Heavy slash, combined later with sprouts, may have discouraged travel of deer in the area. At any rate, browsing was never as heavy as in the other plots and it dropped rapidly after the second season (1949) following the cutting. Apparently the majority of sprouts still alive, as shown in Table 8, are likely to continue so as there was only a 9% increase in mortality in 1951 and 1% increase in 1952. Likewise, the severe deer browsing which did occur has apparently reached its limit. Browsing involved in Table 8 sprouts increased only 1% in 1951, and none in 1952. On those sprouts of Table 9 there was only 1% increase in 1952. It may be that the areas have become less attractive to deer due to the sprouts becoming either more woody or lesser in amount. Deer browsing has been believed to be an important limiting factor in reestablishment of birch stands by sprout growth. One reason was that wherever a down tree-crown laid across a stump, sprouts that did arise were unbrowsed and grew well. In the last study area it was noticed at the start that deer were abundant. 21 stumps were surrounded individually with 5-foot poultry wire and have been successfully protected from deer. However, in tallies at the end of the second growing season, 1951, there were 9% of the stumps having the sprouts dead and by September 1952 there were 33%. Table 9 shows 88% of the unprotected stumps with their sprouts dead. Thus, while the wire protection has been of

benefit, it is apparent that browsing is not responsible for all sprout death.

The conclusion is that with this series of cuttings sprout growth of birch will form at the most only a small percentage of the future stands except with 1 plot it will probably give a fair representation.

Cleaning. A study on birch cleaning was started in 1951 in an area on the eastern side of Mt. Abraham in Salem and owned by the Forster Manufacturing Company of Strong. The area had been a hardwood stand, logged during the winter of 1943-44, and burned in the summer of 1944. It came up to thick white and yellow birch, and poplar which by 1951 was over-topping the birch. The stand is now in the sapling stage, or more than 3 feet high but less than 4 inches D.B.H. The purpose of the experiment was to determine whether or not it would be economical to favor white and yellow birch reproduction on such areas by removing the over-topping poplars. The term applied to this work is "cleaning." The working section was limited as the remainder of the burned area supported either all white birch or all poplar and, therefore, could not be used for this particular phase of study.

The original plan was to "clean" separate sections of the area during different seasons in order to determine which would be the best time of the year to do the work. However, the poplar-birch area suitable for experiment was smaller than had been anticipated, for the reason mentioned above, and most of the cleaning was done during August of 1951. A small part was cleaned during November of 1951. In addition to the 1 1/5 acre which was cleaned, a half acre plot adjacent to and similar to the cleaned section was set apart to check the results of cleaned against uncleaned portions of the area.

The cleaning job was accomplished by cutting with an axe some of the over-topping poplars in order to give the birches sufficent light but not enough to cause the birches to become limby. Lines were run 7 feet apart, and at 7 foot intervals along these lines the over-topping poplars were removed. The spacing of 7′ x 7′ gave approximately 1,000 birches cleaned per acre for this early stage of management. The majority of the poplars removed were chopped off at a height of 4 to 5 feet above the ground, a few were cut close to the ground, and a few were girdled by the one-hack method. Some care had to be taken when

felling poplars because the birches in the under-story were very limber and were easily bent to the ground when falling poplars hit them.

In the fall of 1951, after the cleaning job was finished, 250 birch trees in the area were tagged with consecutive numbers in order to keep accurate records on growth, and to check the results from year to year. Total height, and seasonal height growth of these 250 trees were measured and recorded in the fall of 1951 and again in the fall of 1952. The diameters at 2½ feet above the ground were also recorded before the growing season started in the spring of 1952.

The general conditions in the area were as follows:

1951—Poplars: Average height 20 feet (range 9 to 25 feet)
Average height growth 3 feet
Birches: Average height 6 feet (range 2 to 15 feet)
Average height growth 2 feet
1952—Poplars: Average height growth 2 feet
Birches: Average height growth 1 foot

Table 10, giving the results to date, and other data show that even though there was a general drop in height growth in 1952 the cleaned portion had a bigger decrease than the uncleaned portion, and that the growth in the fall cleaning had a decrease of approximately 5 inches more than in the summer cleaning:

TABLE 10
Growth of Cleaned and Uncleaned White Birch after One Year

Year	Data	Summer Cleaning 100 Trees	Fall Cleaning 50 Trees	Summer and Fall Cleaning 150 Trees	Uncleaned Check 100 Trees
* 1951	Av. Ht. Growth	19.1	21.4	19.9	19.1
Oct. 1952	Inches	10.8	7.9	9.9	12.1
	Sprouting Condition	Non-Vigorous	Vigorous		
	Tallest Sprout Ft.	3	11		
	% Mortality	3	12	6	2

*1951 data was taken immediately after cleaning job in fall.

Sprouting ability of poplar indicated the relative danger of fall cleaning as sprouts from some such poplar appear as if they will over-top the nearby birch again in another season. Mortality was due to snow or ice breakage. The one-hack method did not work well because the poplars were so small that the first wind storm after treatment broke them over. Sprouts from those trees cut close to the ground were much more vigorous than from those cut 4 to 5 feet above ground.

When the cleaning was being done in 1951 it was observed that the over-topped birches were very limber and had difficulty in supporting their own weight. In the fall of 1952 it was quite noticeable that these once limber birches in the cleaned area were now very sturdy and were supporting themselves upright without difficulty. The under-story birches in the uncleaned portion were on the other hand still very limber and weak.

Management. Representative plots for both species of birch were set up in 1948, and thereafter, in fresh cuttings to see if there were a degree of cut which would be economical and at the same time would not result in death of residual birch. Two methods of checking on this were set up—one involving 40 individual trees picked at random for each test group in which the percentage of cut by basal area around each tree was determined. Two groups for white birch were established by this method, both being in cuttings made to a 9-inch diameter limit. One was set up in 1948 in a 60-year old stand that had 28% of the basal area removed; the other in 1950 in a thrifty 40-year old stand that had 50% of the basal area cut. Three groups for yellow birch were established in 1948 and 1949 by the same method in a large tract of uneven-aged yellow birch in mixture, on mixed-growth and hardwood sites, where selective cutting had removed 40% of the basal area. 1952 conditions of these trees are given in Table 11:

TABLE 11

Condition of 200 residual birch of varying diameters and degrees of cut 3 to 4 years after cutting, by numbers.

A. White birch, 40* trees, 60-year old stand, 4 years after cut
B. White birch, 40 trees, 40-year old stand, 3 years after cut
C. Yellow birch, 120 trees, uneven-aged stand, 4 years after cut

Group and Numerical Ratings: 1949-50-51-52 Respectively	Diameter Range	Year	Trees Showing							
			20-30% Cut				40-50% Cut			
			Increased Injury	Same Condition	Improvement	Total Mortality	Increased Injury	Same Condition	Improvement	Total Mortality
A—White 2.150 2.575	3.5"—5.4"	1952	2	4	2	2	2	2	3	3
2.625 2.700	7.5"—9.4"	1952	1	9	0	0	1	9	0	0
B—White 1.875	3.5"—5.4"	1952	0	9	0	1	1	7	0	2
1.875 1.950	7.5"—9.4"	1952	1	7	2	1	0	9	1	0
C—Yellow 2.183 2.842	5.1"—9.0"	1952	0	24	5	1	0	21	9	0
2.925 2.575	11.1"—15.0"	1952	1	24	5	0	1	24	4	1

*Addition of individual figures does not equal total trees given in one case. Reason is that one tree died this year and appears under both increased injury and total mortality.

The second method involved a 1-acre area of white birch in which 32% of the basal area had been removed. This was established in 1948 within the 60-year old stand mentioned above. Determinations have been made of the effect thereafter on 116 residual white birch. Results are given in Table 12.

TABLE 12
Condition of residual white birch on 1-acre area, 32% cut, 4 years after cutting

Year	Percentage of 116 Trees Showing				
	Increased Injury	Same Condition	Improvement	Total Mortality	Numerical Rating
1949	32.8	64.7	25.0	6.9	2.97
1950	43.0	25.0	12.2	19.8	3.55
1951	6.9	50.9	18.1	24.1	3.38
1952	12.9	48.3	14.7	24.1	3.31

At this relatively short period of time since the cuttings the only deduction from the tables is that the smaller diameter white birch trees are showing the effects of the cutting more than the larger diameter trees, and more so in the older stand. With the characteristics of white birch in mind these results seem to be logical. Numerical rating of the white birch in Table 11-A and in Table 12 differ although the trees are in the same general stand. The reason could be that the latter were in a 1-acre block where the removal of 32% over-all naturally varied in intensity around individual trees. Yellow birch trees show an over-all improvement in their condition in 1952. Only one tree died in 1952 and that was a white birch. With a knowledge of the annual progress which has occurred in all plots it is evident that considerable decline took place in the first and, more particularly, in the second year after the cut. It was much more gradual with the younger white birch stand. Thereafter the decline has tapered off or has been replaced by an improvement in condition.

Harold Bullock and Frank Manning, both forest insect rangers, did a very considerable part of the field work and helped some in analysis of data. Mr. E. J. Duda, who formerly helped on this work, resigned in the summer of 1951 and was replaced by George LaBonte.

Summary. All birch work was continued through 1951 and 1952. The 2,200 plot trees now show a general improvement in condition which agrees with the general impression of woodsmen. Supply of birch for mills is holding up better than expected. Spraying tests were inconclusive due to general improvement in

trees and lack of bronze birch borer attack. Tests show after two growing seasons that sowing of birch seeds in old fields is better when done in the fall or during snow in the winter on furrows. Best results with planting of seedlings after two seasons have been with plantings of 2-0 stock in the spring on furrowed land. Plantings are to be made in 1953 alternating white birch and white pine. A study in southern Maine, 1947 burned areas, gave the conclusion that white birch reproduction should produce crops near the average of those in other parts of Maine. 5 study plots of sprout growth arising from white birch stumps gave the conclusion that such growth would form a very small part of the succeeding stands; except that such growth in one plot area should form a fair part of the next stand. Deer browsing has been severe and fatal to birch sprouts in many cases but is not the sole factor in sprout mortality.

A study on cleaning of white birch, over-topped by poplar, in a 7-year old stand arising from a 1944 burn, was started in 1951 to note possible benefits to the birch.

Management studies to find possible degrees of cut which will not result in death of residual birch have been continued with both species of birch. After 4 years it is shown that the greatest decline in condition of the trees took place the second year after the cut and has since tapered off, with yellow birch showing a generally improved condition in 1952. Small residual white birch seem less able to withstand opening of stands than do larger diameter trees in the same stand. (Robley W. Nash and George A. LaBonte)

Elm Leaf Beetle *(Galerucella xanthomelaena).* This insect remains the most common defoliator of elm throughout southern Maine and any shade tree program which includes spraying must take this into account. Spraying should be delayed until the foliage is 2/3 grown if effective control is desired. Continued spraying with DDT alone is resulting in a heavy build-up of red spiders which cause severe browning of foliage. The addition of a miticide to control the red spiders or the use of arsenate of lead is advised.

European Spruce Sawfly *(Diprion hercyniae).* A number of years ago heavy infestations of this defoliator appeared in Maine. Large numbers of parasites were reared and distributed throughout the spruce regions to control the insect. The project was successful. In 1951 and 1952 the sawfly has again begun to increase

in eastern Maine but it is believed that the parasites that were established back in 1935-1942 will hold any future outbreak in check.

Forest Tent Caterpillar *(Malacosoma disstria)*. In 1948 an outbreak of this insect started north of Mt. Katahdin. From this point it spread toward the south and east. In 1951 an aerial survey conducted by Harold Bullock, one of the insect rangers, showed that the insect had spread to and was heavily defoliating poplar and birch in T. 5, R. 8 and T. 5, R. 9. The outbreak was especially heavy along the East Branch of the Penobscot River and in spots near Mattagamon Lake. Plans were tentatively formed to spray where campers tent and picnic in Baxter State Park if the infestation continued in 1952. During the summer of 1951 swarms of parasitic flies of the *Tachinidae* family were noted where the tent caterpillar was abundant. As the outbreak subsided almost completely in 1952 a great deal of credit must be given to that parasite.

In 1952 a new outbreak was observed by insect ranger Frank Manning in Lowelltown near the Beattie town line along the Canadian Pacific Railroad. A survey of the area was made by Frank Manning and George LaBonte to determine the potential threat to the more than 100,000 acres of poplar growing in an old burn in the general vicinity. The survey showed that there are roughly 515 acres in the outbreak to date, of which 179 acres are heavily infested and the balance medium infested.

An egg mass count showed a potential population of from 10,000 to 20,000 caterpillars per tree in that area which is now heavily infested, necessitating a close watch during the coming season. It is hoped that this area can be sprayed from the air this spring.

In the running of the light traps this year, it was noted that those traps showing the highest count of forest tent caterpillars form a band across the center of the state from Coburn Gore to Kellyland. Some traps collected over 1,000 moths.

Oak Twig Pruner *(Hypermallus villosus)*. In 1952 many reports were received from central and southern Maine of oak twigs and small branches falling to the ground and appearing as if cut off with a knife. The damage was caused by the oak twig pruner which passes the winter in the fallen twigs. This year samples of injury were received from maple and beech as well as oak.

Pales Weevil *(Hylobius pales).* The project to study injury from this insect started in 1948 on the extensive burned areas in southern Maine was carried through 1951. It was known that it was not safe to plant on freshly cut-over pine lands until the third year. It was not known what the situation would be on freshly burned over pine lands. In cooperation with the U. S. Forest Service, the Western Maine Forest Nursery, and a number of private owners, plantings were made for a period of 3 years on light types of burned areas—white pine, pitch pine, and red pine both cut in salvage and uncut. The results showed severe damage to white and red pine planting stock the first and second years with very little damage the third year following the burn. Norway spruce plantings on the burned areas were not so severely damaged but in one case ran as high as 44% the first two years. The experimental plots were carried through the fourth year (1951) as a complete check and no further loss occurred except in one plot where someone had gone in and salvaged some red pine. This brought the weevils right back again.

The results show conclusively that no coniferous plantations should be started on freshly cut or freshly burned white pine, red pine, or pitch pine areas until the third year following the cutting or the burning.

In almost all of the burned, uncut areas beetles and decay had attacked the standing trees to such an extent that by the fourth year they had fallen and were a tangled mass on the ground so that checking of the plots was extremely difficult.

Pine Leaf Aphid *(Pineus pinifoliae).* White pine is being injured in some parts of Maine by this aphid which causes a severe and extensive drooping along with yellowing and browning of the terminal growth. The aphid over-winters as nymphs on twigs of white pine. In the spring they molt into winged individuals which migrate to spruce where they form terminal galls by feeding in the opening buds. In Maine these galls open about the middle of June and the adults migrate to mature needles of white pine where the females produce young which migrate to the new growth twigs and feed, thus causing the damage.

In 1951 the aphid was abundant around Bethel and Stow and also on Mt. Desert Island. In 1952 it was very heavy around Albany, Stow, and Stoneham in the area between Fryeburg and Gilead. It was also abundant in T. 40 and T. 34 in Hancock County. In both years the insect was light in Salem.

Spruce Budworm *(Choristoneura fumiferana).* Still the major threat to the spruce-fir forests of Maine, this insect is being carefully surveyed for and studied each year by the Maine Forest Service and the New Haven Station of the U. S. Department of Agriculture, Division of Forest Insect Investigations. Although the 1951 investigations showed a general decrease in most stages of the budworm, the 1952 surveys showed an increase in total acreage and a decided increase in intensity in parts of this acreage. Close cooperation between the landowners and the above mentioned agencies has helped in maintaining a close watch over this forest pest. The detailed work was carried out through ground, aerial, and egg mass surveys, rearing and releasing parasites, and studies determining the effect of natural factors of control. Studies of woodland spray operations for the control of the budworm in the nearby Canadian Province of New Brunswick were also made.

Ground Surveys. In the years 1951 and 1952, as in other years, intensive ground surveys were carried out to determine as nearly as possible the general distribution of the budworm and where the incidence of feeding was the heaviest. There are three general sources from which information is obtained to complete the ground survey. These are the landowners and other interested parties, the fire wardens, and the insect rangers. Information received from landowners and others is usually of a very general nature, i.e. the budworm is or is not noted in an area. The fire wardens supply a little more detailed information in that they beat a number of fir or spruce trees with a 10 or 15-foot pole and collect the insects which drop on a sheet laid beneath the tree. These insects are placed in a mailing can and sent to the entomology laboratory in Augusta for identification. The third and perhaps the most detailed source of information comes from the insect rangers. These men try to cover their districts as thoroughly as possible. Their collections are made by cutting with pole pruners 5 15-inch twigs from each of 5 trees in an area. These twigs are searched for possible budworms as well as other insects. The rangers also have between them 60 permanent observation points from which twig samples are cut each year. These points are located strategically about the state in order to more closely watch the rise or fall of the budworm population. This latter method of detection gives quite accurate information on the degree of infestation.

In 1951 there were 3 areas in the state showing fairly heavy

budworm feeding. One was around East Lake in T. 17, R. 14; another was on the west side of the Allagash between Twin Brook and Big Brook and along Big Brook in T. 15, R. 10 and T. 14, R. 10 to Beavertail Pond; and the last was in the vicinity of Stockholm, Westmanland, and T. 16, R. 4. Of the 60 permanent observation points checked in 1951, 14 showed an increase in budworm population, 32 showed a decrease, and 14 remained the same. The 1952 ground survey showed that the areas of infestation remained about the same except for that infestation at East Lake which has apparently subsided. The largest larval counts were noted at Stockholm, T. 16, R. 4, and Westmanland, with fairly high numbers also found along the Allagash and Big Brook in T. 15, R. 10 and T. 15, R. 11. Although the infestation in 1952 covers approximately the same areas as 1951, the populations and defoliation in these areas, especially in T. 16, R. 4 and Westmanland, appear to be much greater.

Light Traps. In 1951 and 1952 21 light traps were run throughout the state in order to catch possible flights of budworm moths either originating in Maine or in the Province of Quebec or New Brunswick. These traps are run every night from July 5 to August 5 and are valuable in helping predict where new outbreaks may occur. In 1951 fairly heavy catches of moths were made for two nights late in the month of July at Enfield and Kellyland, indicating a possible flight from out of the state. These catches were concentrated on one night at each trap rather than distributed over a longer period as would be expected from local dispersion of moths. In 1952 posters were distributed throughout the spruce-fir regions of the state bringing the possibility of moth flights to the attention of woodsmen, sportsmen, and the general public with the request that if one were detected to report it to the state entomologist. No heavy flights of moths were noted in 1952.

Aerial Survey. The aerial survey is becoming more and more accurate in determining quickly those areas in the state that have fairly heavy spruce budworm populations. The defoliation can be noted quite easily from the air by trained observers while flying at a low altitude over suspected areas. This survey is especially valuable when it is followed up immediately by an intensive ground check.

The 1951 aerial survey was carried out in a Cessna 195 seaplane belonging to the Bureau of Entomology. The observers on

the survey were James L. Bean and Robert Heller, the latter being the pilot, both of the Bureau, and Joel Marsh of the Maine Forest Service. A line strip type of cruise was made at an altitude of 200 to 250 feet following flight lines spaced 6 miles apart and running east to west. A record of the budworm defoliation was obtained on an operational recorder and later transferred to a map.

It was found that 3 areas of the state having a combined total of 236,000 acres showed scattered defoliation as compared to 1950 which showed 560,000 acres of continuous defoliation and 3,440,000 acres of scattered defoliation. The largest of these areas was centered around the Cross Lake-Madawaska Lake region. The second largest centered around the Big Brook-Deboulie Mt. region. The third area included fir stands around East Lake on the Canadian border.

The 1952 aerial survey was carried out in much the same manner as that in 1951 with the exception that in the absence of the federal plane, a privately-owned and piloted Stinson float type plane was hired. The observers this year were James L. Bean of the Bureau of Entomology and Charles S. Hood of the Maine Forest Service. Again this year flight lines were laid out 6 miles apart. Three keys were used on the operational recorder this year for no defoliation, scattered defoliation, and continuous defoliation. Two areas totalling approximately 416,000 acres, of which 90,000 was recorded as continuous, were noticeably defoliated. The largest of these areas centered west of Fish River Lake in T. 13, R. 9 and T. 14, R. 9. The smaller area centered in T. 16, R. 4 between Square Lake and Madawaska Lake. No defoliation was visible around East Lake this year.

It was later found that the aerial survey this year tied in quite closely with the subsequent egg mass survey. The highest egg mass counts were found in those areas which were surveyed as having continuous defoliation. The aerial survey is especially valuable in covering those areas of the state that are not easily accessible to the insect rangers in their check-up of their districts.

Egg Mass Survey. The most valuable aspect of this survey is that it gives us an insight into the expected budworm population for the following year. It is the last budworm survey to be made during the season's work. This survey is carried out in much the same manner as is the ground survey by the cutting

and careful inspection of 5 15-inch twigs from each of 5 trees at a collection point. The inspection of these twigs entails a great deal more time than during the larval stage of the insect. As the eggs are small and are laid in masses on the underside of individual needles, the search must be very thorough. Along with the search for eggs in this survey, an estimate is made of the defoliation on each of the sampled trees.

Showing a general trend in the budworm decline in 1951 was the finding, with few exceptions, of less egg masses than in 1950, although the survey covered more ground than in previous years. The highest egg mass count of the survey was obtained from the collection point on the trail between Beavertail Pond and Big Brook. Collections with fairly high counts were also taken in the Square Lake-Madawaska Lake area. As it was subsequently found out in 1952, these spots showed the highest larval counts and the heaviest defoliation.

Although collections in 1952 were confined principally to known areas of infestation in Aroostook County, samples were taken, as previously, elsewhere in the spruce-fir sections of the state. In general, the highest egg mass counts this year were recorded in the areas with heaviest feeding. Defoliation in T. 16, R. 4 in the vicinity of Madawaska Lake ranged from 5% to 90% of current year's growth with a few trees showing a cumulative loss of 60% to 75% of the entire foliage. Some collection points in this area showed egg mass counts as high as those which are considered heavy in New Brunswick.

Rearing of Parasites. The work of establishing the western hymenopterous parasite, *(Phytodietus fumiferanae)*, in the spruce-fir stands of Maine wherever spruce budworm infestations are found, was carried on again in the springs of 1951 and 1952. The rearing of this parasite was centered in the laboratory at Augusta during the last two years.

In addition to the breeding stock kept at the laboratory for rearing, it was possible to liberate 3 colonies of parasites during each of the last two seasons. These colonies were liberated in heavily infested areas as follows:

1951	Madawaska Lake	122 females	30 males
	Cross Lake	119 females	30 males
	Soldier Pond	56 females	27 males
1952	Madawaska Lake	102 females	110 males
	Cross Lake	44 females	70 males
	Soldier Pond	98 females	66 males

This particular parasite has one generation a year and it over-winters in the cocoon stage. Females oviposit very slowly.

Over-wintering cocoons are brought out of refrigeration and are exposed to warm temperature. Cocoons are placed singly in cotton capped vials. Males emerge first and are placed in a large cage in which mashed budworm larvae, moistened sugar, honey, and raisins are added for food. As the females emerge they are introduced singly into the cage with the males, and as soon as a female is mated it is removed and placed in a small oviposition cage with food. They are then kept and fed in these small oviposition cages in lots of 3 or 4 for 10 days until ready for oviposition. In the meantime budworm larvae are being reared to the fifth stage. As they enter the fifth stage, small fir shoots are placed on squares of cardboard and budworm larvae are placed on them to spin their webs. Then each cardboard, with a larva, is inserted into an oviposition cage. The female parasite stings and paralyzes the budworm, and as soon as the parasite egg is deposited on the larva it is removed and another one inserted in its place. After being parasitized, the budworm larvae are given fresh fir foliage and placed singly in cotton capped vials where they are tended and fed every other day, or every day when necessary, until the parasite cocoons have developed. It takes about 2 weeks for the parasite cocoon to develop from the time the egg is deposited. At the end of the season the cocoons are gathered and packed to be shipped to the Bureau of Entomology, New Haven, Conn. for winter storage. The following production of eggs and cocoon formation took place during rearing work with this parasite:

Year	Eggs	Cocoons	% Emerging After over-wintering	% of Adults which were Females
1951	3,698	1,803	68%	33%
1952	4,016	900	62.4%	26%

During the 1951 season spruce budworm larvae used for parasite rearing were collected in the field and sent to the laboratory. This was not always satisfactory because of the high percentage of budworms which had already been parasitized by native species. In 1952 all budworms used for the parasite project were reared in the laboratory from the tiny over-wintering stage. The over-wintering budworms were kept in refrigeration until such time as they were needed. However, the feeding requirements of these tiny caterpillars made it difficult to rear them to good healthy specimens after the first week of June because of the lack

of fir buds or newly opened shoots after that time. For this reason many larvae were weak and died soon after the parasite egg was laid on them. The net result was loss of parasites so that the 1952 total rearing was less than in 1951. Next year we may start the program about one month earlier, around the first of May. This will require more work in forcing out fir foliage, but the results should be well worth the effort in getting good healthy budworms for parasite rearing.

Sufficient time has not elapsed to allow determination of the effect of this parasite on the spruce budworm population. However, in view of the fact that control at varying degrees has been accomplished in other cases by introduced parasites, it is felt that this parasite once established will be most beneficial. Such a project is definitely a worthwhile venture.

Valuable information and assistance in the rearing of this parasite was given by Mr. Philip Dowden of the Bureau of Entomology, New Haven, Conn. The 1951 project was handled by E. J. Duda and the 1952 project by George LaBonte.

Conditions in Nearby States and Provinces. In both the years 1951 and 1952 cooperative surveys conducted in New Hampshire, Vermont, and New York indicated extremely light infestations of the spruce budworm with no measurable defoliation of spruce and fir.

In Quebec in 1951 there was an indication that the budworm population was on the decrease in most sections north of the St. Lawrence River. There was, however, a definite increase in numbers of budworms and defoliation at most points south of the St. Lawrence, including the Gaspé Peninsula. This shows clearly the eastward progression of the present outbreak in Quebec. Again in 1952 there was a general decline in budworm populations in all regions of the Province with the exception of the Matapedia Valley and the Gaspé Peninsula.

In 1951 the budworm infestation reached serious proportions in the northern section of New Brunswick. Over 2,000 square miles were severely infested with the main outbreak covering the drainages of the Upsalquitch, Nepisquit, and Tobique Rivers. In 1952 this infestation had increased to approximately 5,000 square miles. The extension of the main infestation was mostly in a southeastward direction. Extensive egg mass surveys indicate further southward spread of the infestation as far as the Penous River drainage in 1953.

Present Situation. Between the year 1950 and 1951 there was a sudden and decided drop in the over-all budworm population in the state. In 1951 the infestation was confined to three rather localized areas and only scattered defoliation was noted. In 1952 two of the areas again increased in size and intensity and the third at East Lake went out of the picture. One of the areas, T. 16, R. 4-Madawaska Lake, increased quite noticeably in the intensity of the budworm attack this year. This area will bear careful watching in the coming year as the highest egg counts were made in that area.

Spraying Operations. The value of well timed and carefully carried out woodland spray operations is becoming more and more evident each year. With this in mind the Maine Forest Service has cooperated in spraying operations carried out in the two nearby Canadian Provinces.

In 1951, near Bagotville, Quebec, an experimental airplane spraying project was carried out by the cooperative efforts of the Division of Forest Insect Investigations, U. S. Department of Agriculture, the Maine Forest Service, and the Quebec Bureau of Entomology. Joel Marsh was the representative from the Maine Forest Service. The purpose of this experiment was to find the best timing for the spraying of the spruce budworm, the proper dosage to use in order to deposit the amount necessary and yet small enough not to injure other forms of wildlife, and to determine the proper atomization of the spray. It was found that the spray should be applied when 50% of the larvae have reached the fifth instar, that 1 pound of DDT applied over 1 acre was the lowest dosage that could be applied for practical control, and that medium atomization gave the best residual coverage.

With the knowledge that the budworm could be controlled in a forested area by airplane spraying and with the threat of widespread tree mortality imminent, it was decided by the New Brunswick International Paper Company and the Provincial Government that 200,000 acres of spruce and fir in northern New Brunswick should be sprayed in 1952. This project was carried out, and as far as is known to date excellent results were obtained. R. W. Nash and C. S. Hood, representing the Maine Forest Service, spent some time during the height of the spraying observing the operation and gathering material to be made into a report. This report will be of great value to the state should a need for spraying arise some time in the future.

Conclusions and Recommendations. Federal entomologists and department officials agreed that spraying in this state would not be needed in the coming year. The population has not been at this high level for a long enough time to cause a threat of tree mortality which has been the criterion for the initiation of control measures in Oregon and New Brunswick. There is always the possibility that natural factors will exert the necessary controlling effect, as they have in other similarly infested localities in northern Maine. There must be a period of observing to see whether the budworm or its natural enemies can gain the upper hand in their never-ending struggle. It is believed that the parasite rearing program should be continued in an effort to help natural control as far as possible.

Sugar Maple Borer *(Glycobius speciosus)*. A great deal of damage has been done to sugar maple shade trees in many of our cities and towns and it is believed that drought conditions during the past few years have done much to make the trees susceptible to borer attack. During 1952 scattered reports of maple dying in different sections of the state were received. The most severe damage reported was in Avon, Phillips, and Jim Pond. In order to prevent drying out of roots, evidence would indicate that maple stands should not be heavily thinned. There is need for further study as to the best management for sugar maple orchards.

White Pine Weevil. This insect, which kills the leading shoot of pine and spruce, causes the trees to become forked and much branched. This greatly lowers their value for lumber purposes possibly as much as 40% as an average for the white pine areas of the state. Considerable work has been done by the department in seeking economical methods of control. Considerable relief can be obtained through proper forest management and through spraying. As this insect is considered one of the most serious in the Northeast, the entire region is starting a broad program of research in which the federal government and each state are cooperating to make basic studies leading to control. One of the primary moves is the establishment of permanent sample plots. 22 quarter-acre plots were established in 1951 and 1952 in areas of young pine, either plantation or natural growth. These are as follows:

White Pine Weevil Plots

Location	Type of Growth	Location	Type of Growth
Acton	Plantation	Lee	Plantation
Andover	Plantation	Liberty	Plantation
Blue Hill	Natural	Livermore	Plantation
Bridgton	Natural	Madison	Plantation
Brunswick	Plantation	Passadumkeag	Natural
China	Natural	T. 30, MD	Plantation
Dover-Foxcroft	Natural	Turner	Plantation
East Orland	Plantation	Waldo	Natural
Ellsworth	Natural	Weld	Plantation
Fryeburg	Plantation	Wells	Natural
Hampden	Plantation	Whitefield	Natural

The purpose of the plots is to provide information on the present status of damage to white pine and Norway spruce and an annual record of weevil attack. This information will be valuable in determining the relative importance of the weevil throughout the Northeast and the fluctuations in weevil populations in the future. It will also provide basic information for possible control operations. The plots will serve as a basis for ecological studies showing why the weevil greatly increases in abundance some years, why it is more abundant in some areas than others, and why some trees are more likely to be attacked than others. The first year's results show that it is the tallest or most rapidly growing trees that are attacked.

Eastern Wood Tick *(Dermacentor variabilis).* Although reports and specimens of Eastern wood or American Dog Tick are received occasionally from that part of Maine south of Orono and Ellsworth, no real outbreaks or severe infestations were reported until the spring of 1951. At that time a heavy infestation was reported near Casco. The infested area extended from the Sebago State Park and Raymond Neck north to Bolster's Mills. It was particularly heavy along the Crooked River and its tributaries to Scribner's Mills. The infested area was a relatively flat river valley forming the long side of a "V" with the so-called Jugtown Plains, meadows, and swamps, forming the other arm of the "V". The forest cover of pitch and white pine was broken with many heavily grassed glades. The area was a favorite place for fishermen and some of the glades were used as pasturage. The soil was a sandy loam and the grass in places very heavy and matted. Ticks had begun to be carried into nearby towns and summer camps by cattle, dogs, and people. Woodsmen working in the area would frequently have from 20 to 40 ticks on them when they came home from work. Cattle had to be looked over and the ticks taken off. The U. S. Department of Agriculture, Bureau of Entomology, was contacted and they sent Capt. M. M.

Cole, a tick specialist who spent part of one day on the area. Ticks were very abundant and it was too late to plan any extensive spraying. It was decided to spray one area near Edes Falls using a mist blower, applying a 12% DDT solution at the approximate rate of 1 pound per acre. Mr. John Kuschke from the U. S. Public Health Service assisted in checking the area before and after spraying. The results were highly satisfactory as nearly all adult ticks in the sprayed area were killed. Mr. Kuschke continued his survey mapping in the infested areas in preparation for more extensive spraying in 1952.

The typical life history of the tick consists of 4 stages: the egg, the larva or seed tick, the nymph, and the sexually mature adult. Ticks of this species mate while on the host where the female engorges for about 10 days and then drops off and may lay from 4,000 to 6,500 small, round, brownish eggs in masses on the ground. Egg laying may continue over a period of from 2 to 4 weeks with as many as 800 eggs being laid per day. In about a month the eggs hatch into tiny six-legged larvae. These may remain alive for a considerable time without feeding. When a suitable host, usually a mouse or other small rodent passes, the larva attaches itself and feeds from 3 days to 2 weeks. It then drops off and passes into the nymph stage which also feeds on the blood of small animals for from 3 to 10 days. It then drops off, overwinters in the duff and changes into the sexually mature adult which is chestnut brown to blue gray with 8 large legs. It is about 3/16 inch long before feeding. The male has a white marked hard shield over its back. The adults appear the second year in late May and June and are abundant on blades of grass and bushes along trails where they can attach themselves to animals. About 90% of the ticks are found in grassland.

Ticks are not only unpleasant, but very frequently in trying to get them off the head is broken off in a person's flesh. A festering sore, slow to heal, frequently results. Ticks may also carry diseases such as Rocky Mountain Spotted Fever and Tularemia. If a tick attaches itself to the base of the skull of a child or small animal it can cause a paralysis, which if allowed to continue long enough can cause death. Recovery, however, is usually rapid if the tick is removed before the paralysis affects the respiratory system.

For the 1952 season preparations were made to spray a large acreage by helicopter with DDT. Early in June, through the co-

operation of the Game Division of the State Department of Inland Fisheries and Game, use of their airplane and pilot Robert Bacon were used for the survey work. Aerial photographs at an altitude of 9,000 feet were taken of the general area by E. R. Grove, each 4 or 5-inch exposure covering about 1 square mile of ground area. Following this and at an altitude of 200 feet, open places and recently cut forest stands in the same general area were plotted on U. S. Geological Survey maps as a check for the aerial photographs. The final survey process, consisting of ground checks for infestation, was made by Grove; C. S. Hood; a local man Willis White, temporarily hired for this work; and John Kuschke of the U. S. Public Health Service. This was done by dragging a yard-square piece of white flannel over the ground growth. The unit of measurement or so-called "drag" consisted of dragging the cloth for 25 steps and counting the number of ticks thereon. Averages of up to 4 ticks per drag were obtained. Areas were thence selected for spraying and designated on the base maps for use by the helicopter pilot. Those areas which were being grazed by cattle were also mapped in for no-spraying. Permission for spraying was obtained from owners and from selectmen of the involved towns.

Just prior to the spraying numerous spray-deposit papers were placed on short stakes in selected areas. In addition, department personnel observed actual spraying of key areas. Both of these procedures were carried out to check on the efficiency of the spray pilot who was told what we were doing but not the locations being checked. Agreement was made that areas would be resprayed wherever applications were unsatisfactory.

On June 17 and 18, 1952 approximately 1,150 acres in the towns of Naples, Otisfield, and Casco (in the general area where they adjoin) were sprayed by a helicopter of Airborne Sprayers, Division East Coast Aviation Corporation, Lexington, Massachusetts, in a very good manner as shown by the sample spray-deposit papers and as observed by our personnel. Spraying was done in the early morning before any winds or rising of air currents. All was sprayed with a 12% solution of DDT in oil, i.e. 1 pound of DDT to 1 gallon of oil at that rate per acre; except that one 15-acre area was flown twice to give it a deposit of 2 pounds DDT per acre. The total per acre cost was $1.80, amounting to $2,100.

Results of the spraying were determined by "dragging" in sample sprayed areas and comparing tick numbers obtained with the

numbers obtained prior to spraying. Checking was done in a period of 2 to 7 days following the spray. Over the sample areas an average of .93 ticks per drag was reduced to .02 ticks per drag or 97.8% control. Two representative areas gave reductions of from 1.62 ticks per drag to .07 per drag, and 2.58 ticks per drag to 0 per drag. The 2-pound per acre test showed quicker kill but insufficient additional kill to justify the added expense. It was noticed that some paralyzing effect on the ticks occurred shortly after spraying but that actual death amounted to little until at least a full day after the spray. Mosquitoes and black flies were very abundant up to the time of spray application. In one area the time was noted and within 20 minutes after the spraying these insects were rare. Experiences of natives in the area bore out our version of the results, not only with the ticks but as well with mosquitoes and black flies. They were well impressed with the value of spraying with DDT.

Since ticks involve a 2-year cycle, effective control demands spraying in 2 consecutive years. Therefore, the same areas should be resprayed in 1953 and perhaps control can be started on additional areas.

Mr. Robert Foye, Regional Fishery Biologist; assisted by Roger Hoffman, Game Biologist; and George Briggs, District Game Warden—all of the State Department of Inland Fisheries and Game—made observations with a report thereon on the effect of DDT on fish life in streams in the sprayed areas. Three seines were set in suitable locations downstream from spraying. Brook trout were observed before and after the spraying in one pool and noted no signs of distress. However, the seines did catch some small suckers, one brown trout fingerling, and one salmon fry. The summarized opinion was that not too many fish were killed directly by the DDT.

Certain research agencies interested in developing tick repellents asked the division to test two chemicals. Mr. Harry Haynes of the Carbide and Carbon Chemicals Co., New York City, supplied their Experimental Tick Repellent 3 containing di-n-butyl adipate. Dr. Phillip Granett, Research Specialist at Rutgers University, supplied Experimental Tick Repellent M-1960. The former was diluted at the rate of 1 part to 16 parts of water into which clothing was dipped. In 1951 it was tried by woodsmen and gave 85% reduction of ticks getting on the men. In 1952 it was tried by one of the division personnel and its use reduced

ticks getting on him by 100%. The latter material was sprayed on other clothing of this same person in 1952, tested out, and gave 100% reduction in ticks getting on him. In all fairness it should be stated that it was probable none of the tests with either repellent were exhaustive enough or repeated sufficient times to give conclusive evidence of their value. Tests in other places with this and other ticks are giving fine results with repellents which appear to be very valuable in keeping people free of ticks when applied before going into infested regions.

The extensive draggings made in surveying the areas and checking results of the spraying gave us much better first-hand knowledge as to the type of growth and conditions under which ticks are most likely to be found. These observations are summarized as follows: Ticks occur in largest numbers on grass, low bushes, or alders along streams in open or rather open places and more abundantly along trails. They do not occur on large trees or under thick growth of large trees but they do occur along woods roads, in wide cleared strips in wooded areas or in open woodlands—probably the determining factor as to whether they can be expected along places on woods roads or such is the occurrence of heavily grassed land which supports a mouse and small rodent population and direct sunlight for an appreciable period during some part of the time. Ticks may be attracted more to dark clothing. They start crawling upward as soon as they get attached to a person. They seem to climb higher to wait for prey when it is hot and sunny. The greatest numbers are also found in such times although some are in fields when it is damp. Not many are found before 8 A. M. A person can get them after dark. In areas of short grass such as along grassy roadways, ticks are found in the evening more in the short grass or center areas whereas in the bright hot part of the day they are found more abundantly on the edges of the roadway where taller grass and other small plants occur. (R. W. Nash)

Yellow-headed Spruce Sawfly *(Pikonema alaskensis).* This insect, which normally attacks open grown spruce such as trees in plantations or around openings, did a number of years ago considerable damage to forest stands near Phippsburg until brought under control by airplane spraying. Infestations have been light during the past two years. Mr. E. J. Duda, who formerly worked with the division, is now taking graduate work at the University of Massachusetts and is doing special work on phases of the life history of the insect.

General Forest and Shade Tree Insects. Large numbers of insects are received each year from the insect survey for identification. Records of the more important of these not already mentioned in the text are given in the following table. A comparison of their prevalence during the past 5 years is indicated as follows: H—Heavy, M—Medium, L—Light, —No records.

Host and Insect	Locality Affected	1948	1949	1950	1951	1952
Alder						
Alder Flea Beetle (*Altica ambiens*)	Central and eastern Maine	—	H	H	H	M
Beech						
Beech Leaf Tier (*Psilocorsis faginella*)	Coastal and eastern Maine	M	M	M	L	L
Birch						
Argid Sawflies (*Arge sps.*)	General, mostly northern Maine	L	L	L	L	—
Birch Casebearer (*Coleophora salmani*)	Pemaquid Point, Owl's Head	—	M	M	L	L
Birch Leaf Miner (*Fenusa pusilla*)	General	M	M	L	H	M
Birch Leaf-mining Sawfly (*Phyllotoma nemorata*)	General	L	L	L	—	—
Birch Skeletonizer (*Bucculatrix canadensisella*)	Enfield	—	—	—	—	M
Rusty Birch Leaf-beetles (*Syneta ferruginea & other sps.*)	General (Root feeders)	L	L	L	L	L
Cherry						
Eastern Tent Caterpillar (*Malacosoma americana*)	General	L	L	L	L	H
Elm						
Elm Leaf Beetle (*Galerucella xanthomelaena*)	Central and southern Maine	M	H	H	H	H
Elm Leaf Miner (*Fenusa ulmi*)	Central and southern Maine	—	—	L	H	M
Morning Cloak Butterfly (*Nymphalis antiopa*)	Central Maine	—	—	—	—	H
Hemlock						
Flat-headed Hemlock Borer (*Melanophila fulvoguttata*)	Central Maine	—	—	—	L	L
Hemlock Looper (*Ellopia fiscellaria*)	General	M	M	M	M	L
Larch						
Larch Casebearer (*Coleophora laricella*)	East-central Maine	L	M	L	M	L
Maple						
Maple Bladder-gall Mite (*Vasates quadripedes*)	Scattered	M	L	L	L	L
Mountain-Ash						
Mountain-Ash Sawfly (*Pristiphora geniculata*)	General, mostly northern Maine	H	M	L	L	L
Pine						
European Pine Shoot Moth (*Rhyacionia buoliana*)	South coastal Maine	—	M	L	L	L
Pine Bark Aphid (*Pineus strobi*)	General	M	M	L	L	M
Pine Needle Miner (*Exoteleia pinifoliella*)	Southern Maine	—	—	M	M	L

Host and Insect	Locality Affected	1948	1949	1950	1951	1952
Pine Needle Scale (*Phenacaspis pinifoliae*)	Central Maine	M	L	L	L	L
Pine Spittle Bug (*Aphrophora parallela*)	General	H	M	M	M	M
Pine Tube Moth (*Argyrotaenia pinatubana*)	Central and coastal Maine	—	M	L	L	L
Red-headed Pine Sawfly (*Neodiprion lecontei*)	Burned areas	L	L	H	L	L
Twice-marked Looper (*Semiothisa bisignata*)	General	L	L	L	L	L
Poplar Satin Moth (*Stilpnotia salicis*)	Augusta and northern Maine	—	—	—	—	H
Spruce and Fir Aphids (*Aphididae*)	General	M	H	H	H	H
Balsam-fir Sawfly (*Neodiprion abietis*)	General	L	L	L	L	L
Brown Spruce Looper (*Eupithecia palpata*)	General	M	M	M	M	M
Dotted-line Looper (*Protoboarmia porcelaria*)	General	M	M	M	M	M
False Hemlock Looper (*Nepytia canosaria*)	General	M	M	M	M	L
False Sawflies (*Pamphiliidae*)	General	L	L	M	M	M
Fir Harlequin (*Elaphria versicolor*)	General	L	M	M	L	L
Fir Tip Borer (*Pleuroneura borealis*)	Western and northern Maine	L	M	M	L	H
Gall Aphids (*Adelgidae*)	General	M	M	M	M	M
Green-headed Spruce Sawfly (*Pikonema dimmockii*)	General	L	L	L	L	L
Green-striped Spruce Caterpillar (*Feralia jocosa*)	General	L	L	M	M	L
Green Spruce Looper (*Semiothisa granitata*)	General	M	M	M	M	M
Grey Spruce Tussock Moth (*Olene sps.*)	General	L	L	M	M	L
Phalaenid larva (*Zanclognatha sp.*)	General	L	L	L	L	L
Red Spruce Leaf-miner (*Recurvaria piceaella*)	General	M	M	M	L	L
Spruce Bud-moth (*Zeiraphera ratzeburgiana*)	General	L	L	L	L	L
Spruce Cone Worm (*Dioryctria reniculella*)	General	M	M	M	L	L
Spruce Webworm (*Epinotia nanana*)	General	M	M	M	M	L
Transverse-banded Looper (*Hydriomena divisaria*)	General	L	L	M	M	L
Yellow-headed Spruce Budworm (*Zeiraphera fortunana*)	Northern Maine	L	L	L	L	L

Host and Insect	Locality Affected	1948	1949	1950	1951	1952
Willow						
Willow Leaf Beetle (*Galerucella decora*)	Northern Maine	L	H	H	M	L
The Willow Flea Weevil (*Orchestes rufipes*)	Mt. Desert	—	—	M	H	H

TREE DISEASES

Drought Damage. Numerous requests for information concerning the browning of the foliage of some trees during September of 1952 pointed out the seriousness of the summer drought experienced in Maine. The most seriously affected trees were the pines and some other evergreens because of their shallow growing root systems. Tops were killed and became infested with bark beetles and borers.

Frost Injury. In May and June of 1951 it was very noticeable that oak foliage in sections of the state from Gardiner south failed to develop. Some interested oak owners became quite worried. Leaves either failed to develop at all or were very small and decidedly off color with a red or yellowish hue. Examination showed the injury to be due entirely to frost damage, which came just as the buds were opening. In York County the damage occurred almost entirely to trees under 6 feet in height where further north it affected trees 40 to 50 feet in height. Injury persisted through the season. North of Farmington sugar maple remained off color during the season, its leaves having a brownish cast. Lombardy and Carolina poplars were severely injured in central and northern Maine.

Salt Spray. Considerable damage occurred to evergreen stands close to the shore particularly on exposed points as the result of a November 1950 hurricane which coated the trees with salt spray. Damage began to show up during the early summer of 1951. It was particularly noticeable on balsam fir, red spruce, and white pine. White spruce seemed to be more immune and this may account for the fact that white spruce is more prevalent on our more exposed ocean points. Plantings are to be started this spring to determine what evergreens are best suited for shore planting.

Chestnut Blight *(Endothia parasitica)*—**Test Plantings of Chinese Chestnut.** Following the near extermination of the American chestnut by the chestnut blight, it became apparent that this tree species would develop immunity to the fungus only after a tremendous period of time, if at all. Scientists of the U. S. De-

partment of Agriculture have for this reason devoted many years searching other parts of the world for a suitable substitute for our chestnut and one that would not be susceptible to the disease. Many importations have been made of species to fit these qualifications but for the most part all have shown disqualification. In fact, some seedlings were planted of imported material in Augusta in 1932 to learn the reactions under Maine conditions. These were *Castanea japonica* and *C. mollissima.* Although they have lived, all but one have continually winter-killed back severely so that they are worthless. The one exception has done quite well in an open location but is of the limby, round, ornamental type of tree.

In 1924 representatives of the U. S. Department of Agriculture imported seeds from a highly desirable form of the Chinese chestnut, *Castanea mollissima,* arbitrarily designated by them as PI 58602. They now believe that this form has excellent possibilities as a replacement for our chestnut in three most desired characteristics: (1) good form as a forest tree and productive of commercially desirable wood, (2) relative freedom from the disease, and (3) productive of good, edible nuts.

From these imported seeds or nuts they have propagated many seedlings and now have test plantings established well over the past range of the American chestnut. The division was asked to cooperate in making small test plantings in Maine and thereafter to note growth results. Accordingly, two small plantings, each of 49 1-0 seedlings, were made in the spring of 1952 on prescribed forest sites. One was in Albany in the White Mountain National Forest, and the other in Liberty in the Lake St. George State Park. These have been sprayed with Z.I.P. to repel deer from browsing on them and will be so treated until they are up beyond the chance of such browsing.

Inspection in the fall of 1952 showed that the seedlings became established and grew well except that one in each planting died. (R. W. Nash)

Dutch Elm Disease *(Ceratostomella ulmi).* All native elms of the United States are susceptible to Dutch elm disease. Despite strenuous efforts to suppress this dread disease it has become established in the principal elm shade tree areas of the Northeast.

The first symptom of the disease is yellowing and wilting of the foliage on one or more branches. The disease will spread to other

parts of the tree until it is entirely affected and the tree dies. Discoloration of the sapwood occurs in all diseased trees but because there are two other common elm diseases with similar symptoms, positive identification must be made in the laboratory.

Good shade tree programs, if undertaken by the cities and towns, will save many trees and in addition will save hundreds of thousands of dollars which might otherwise have to be spent in removing dead trees, to say nothing of the loss in decreased property values. Such programs must be broad in scope covering pruning, feeding, and spraying. Of these three, removal of all dead wood is the first essential. Maine's plan is based on the experience of Connecticut towns within the heavily infected Dutch elm disease area. It was shown that small sums spent yearly to keep trees in good condition would cut the loss by approximately 50%. Evidence shows that the interest alone on the money spent by some cities and towns in removing dead trees would have saved most of them if wisely spent on preventive measures.

A complete and thorough study was made of elms in York County during the summer of 1951. In towns and villages the scouting was done by automobile, but in the outlying areas scouting was done on foot and by canoe. 10 additional elm study plots were established in 1951, bringing the total to 20. These plots or trap logs are designed to provide breeding places for the European elm bark beetle, carrier of the disease, and were established in widely separated areas to assure complete coverage of the Dutch elm disease invasion area. The plots were examined from time to time so as to know when and where the beetles might be working. When the logs were checked in the 1952 season the bark beetles were found to be more abundant in areas where the disease was later found. To date they have been found in Berwick, South Berwick, Kittery, Eliot, and York.

All Dutch elm disease suspect trees were sampled as well as weakened or dying elms in the immediate vicinity. 6 branch samples, 7 inches long, and ¾ inch to 1 inch in diameter were taken from various parts of the tree crown. Small trees were sampled from the ground with a pole pruner. It was necessary in some cases to climb the larger trees to take samples. Large woods-grown trees were sampled by removing 3, 2 inch by 7 inch, slabs of wood from the trunk. Both suspect tree and twig or slab samples are tagged with numbered labels. A description of the suspect tree and its location are recorded. Samples are tied

securely, wrapped, and sent to the state entomologist, Augusta, where permanent records of the suspect tree are filed. Samples are then sent to the Shade Tree Laboratory, University of Massachusetts, Amherst, Mass. where the samples are cultured and positive identification is made. Owners of diseased trees are then notified and their removal requested.

The first Dutch elm diseased tree was found on July 10, 1952, on Long Sands Road in the town of York. By September 3, 1952, 10 trees were found in York and 1 in Kittery. The discovery of the disease in York, 14 air miles from the nearest known 1951 infested area in New Hampshire, is difficult to explain as the beetles move rather slowly. Trap logs and weakened elms in western York County appear not to be infected. The disease carrier, the European elm bark beetle *(Scolytus multistriatus)*, flies only about 800 feet when moving from one tree to another. Normally only 2 flights are made per year and there is no evidence that a migration occurred in 1951-1952. The best explanation seems to be that disease carrying beetles were brought into Maine by automobiles from infected areas. No feeding by the insects was noticed on diseased trees, but galleries and developing larvae were found in the trunks of the trees. Therefore, the insects were probably intercepted by automobiles when they left the feeding grounds in an infected area and were deposited in Maine where they laid their eggs in uncared for trees of York County.

For control it is essential that trees be removed as soon as they have been positively identified as having Dutch elm disease. Two owners removed the trees at their own expense as soon as they were notified that the trees were diseased. Cooperation like this is greatly appreciated by the Maine Forest Service. (E. R. Grove)

Eastern Dwarf Mistletoe *(Arceuthobium pusillum)*. In 1951 and 1952 considerable damage continued to show up along the coast due to this parasitic plant, especially around Boothbay and Pemaquid.

Other Tree Diseases. The past two years has found leaf spotting by fungus diseases of various deciduous trees rather common in occurrence. Maple and elm seem to be the commonest of the trees affected, although it was also reported on ash and hawthorne. Rusts, another type of tree disease, were also prevalent on trees such as mountain ash, ash, hemlock, and cedar. The ash rust usually causes a swelling of the petioles, leaves, and small branches. Another common ailment, generally occurring on shade trees, is a condition called slime flux. It is always preceded by

an injury to the trunk or one of the larger branches. Numerous reports were received of this condition which generally occurs on elms. It is common throughout the state where shade trees are grown.

Shade Tree Program

Concern for the protection of shade trees has increased tremendously since protective legislation was enacted in 1933. The discovery of the Dutch elm disease *(Ceratostomella ulmi)* in York County in July 1952 has made it advisable to have one man, who is a shade tree specialist, give full time to shade tree problems and care.

Increased interest over the last two years is shown by the greater number of talks given and inquiries answered in 1952 than in 1951. This interest has been stimulated through newspaper articles, in-the-field contacts, and talks to public organizations.

Newspaper articles have been written to encourage the people of the state to care for their trees. Other lengthy, illustrated articles were written to explain why tree care is necessary. Inquiries were answered either by letter or by personal call. Talks and illustrated lectures were given throughout the state at garden clubs, selectmen meetings, service clubs, and other interested organizations.

Several cities and towns have requested aid in formulating definite long range shade tree programs. So far, three municipalities and one state institution have had complete shade tree surveys made. Each shade tree in the survey was treated as an individual. A description of the tree was given and recommended treatment noted. All trees were given a number and located on base maps so that histories of the individual trees can be more easily kept.

The old idea that spraying is the only protection needed is obsolete. Probably the most needed work in the majority of cases is pruning to remove all dead wood. Feeding, and watering to keep trees in a healthy condition are essential. The long periods of drought have left many of our shade trees very subject to borer attack and have also influenced the increase of aphids and mites. Heavy spraying with DDT without the use of miticides has also opened the way to heavy mite or red spider injury. The big majority of our shade trees are forest trees which have been brought out and planted under unnatural conditions. They are, therefore, subject to the same insect troubles as poorly managed

forests. In fact, many of our forest insect outbreaks appear first on the weakened shade trees. Many of the most serious shade tree diseases are spread by insects. The division maintains an up-to-date reference library and insect collection to help on problems as they arise.

The garden clubs of the state have been active in promoting the shade tree program and have already made counts of the elm shade trees in 47 cities and towns. The Maine Municipal Association has also been helpful.

The licensing and checking on tree surgeons has done much in helping to bring about better care of our shade trees. It has also helped to build up public confidence which before the act went into effect in 1933, was at a low ebb.

Insects and Other Pests Found in Buildings

During 1951 and 1952, as in other years, many requests have been received to identify and to give advice as to the eradication of insects and other pests which commonly or uncommonly invade homes and camps. Many of these pests such as ants, bean weevils, carpet beetles, moths, and roaches are economically important as they destroy food or household furnishings while others such as bats, bees, clover mites, and elm leaf beetles are harmless within a home but are considered a nuisance. One request was received to identify an insect which had apparently invaded an electric motor in a home in numbers great enough to cause a failure of the motor. The insect was determined to be the strawberry root weevil, a horticultural pest, which often invades homes and other buildings seeking a place for hibernation. These were abundant in many parts of the state.

The following is a list of the more common pests reported invading buildings:

1951-1952

Pests Troublesome in Household and to Stored Products	Locality Affected or Reported	Infestation	
		Status	Type of Danger
Ants (house) (Several species)	General	Common	In houses
Bats	Waterford	Common	In camps and sheds
Bean Weevil (*Acanthoscelides obtectus*)	Mostly south-central Maine	Common	Injury to dry beans
Bedbug (*Cimex lectularius*)	General	Occasional	Bites humans
Bees	Kezar Falls	Occasional	In house
Black Carpenter Ant (*Camponotus herculeanus pennsylvanicus*)	General. Mostly southern Maine	Common	Tunneling and destruction of building timbers
Blue Bottle Fly (*Lucilia caesar*)	Manchester	Occasional	In house
Book Lice	Portland	Occasional	In house

Pests Troublesome in Household and to Stored Products	Locality Affected or Reported	Infestation	
		Status	Type of Danger
Carpet Beetles (Three species)	General	Common	Destruction of woolen goods
Cigarette Beetle (*Lasioderma serricorne*)	General	Occasional	Feeds on tobacco products, book bindings, seeds, etc.
Clothes moths (Two species)	General	Common	Destruction of woolen goods
Clover Mite (*Bryobia praetiosa*)	Lewiston	Rare	In house
Cockroaches (Three species)	General	Common in municipal buildings	Attracted by food waste
Confused Flour Beetle (*Tribolium confusum*)	Mostly central and Southern Maine	Common	Found feeding on flour, grain, meal, etc.
Dog Sucking Louse (*Linognathus setosus*)	Augusta	Rare	On dog
Dog Tick (*Dermacentor variabilis*)	Mostly southwestern Maine	Common	Attacks animals and humans
Elm Leaf Beetle (*Galerucella xanthomelaena*)	General	Common	In houses
Fleas, Cat (*Ctenocephalides felis*)	General	Common	On animals
House Flies (*Musca domestica*)	General	Common	In houses
Mealworm (*Tenebrio molitor*)	Auburn	Occasional	In cereals
Powder Post Beetles (Several species)	Mostly central and southern Maine	Common	Tunneling and destruction of timbers, furniture, and wood products
Pseudoscorpions	Hallowell	Rare	In house
Rats	Augusta	Common	In house
Saw-toothed Grain Beetle (*Oryzaephilus surinamensis*)	Mostly central and southern Maine	Common	Feeding on dry food stuffs
Silverfish (Two species)	General	Common	Feeds on starched paper and cloth goods
Sowbugs (*Isopoda*)	Bailey Island	Occasional	In houses
Strawberry Root Weevil (*Brachyrhinus ovatus*)	Central and coastal Maine	Common	In houses
Wasps	General	Common	In houses

Insect Phobia. A number of interesting cases in which people have felt their homes were over-run with tiny insects too small to be seen have been brought to the attention of the division. Microscopic examination of material suspected of being infected in no case showed any insects or mites. Such people are very sincere in their belief and are given sympathetic interest in their problem. Small particles of dust and dirt appeared to be insects. It is a case of a phobia with no actual insects involved.

Mosquito and Fly Control. The division is continually being called on for aid in helping individuals and groups in mosquito control work. It is customary now for communities to organize mosquito control projects thus cutting down the cost of spraying for each individual. Airplane spraying has in most cases been highly successful and as a rule two sprayings have been sufficient to protect summer residents. It is not believed that mosquitoes in Maine have built up a resistance to DDT as yet, with the possible exception of southern York County. The few cases where results have not been good can usually be traced to rains following the spraying or this past summer of 1952 to abnormally high tides leaving tidal pools. An effort is being made to cooperate as closely as possible with commercial concerns doing airplane spraying and those using mist blowers and fog machines.

On two large construction jobs advice was given on black fly control which was very materially hindering work. Several pulp companies have shown an interest in spraying along with their woods operations during the fly season in July.

Some camps are using vaporizers to control flies indoors. Care must be used with these as too high a concentration is dangerous to humans. Indoor sprays are also used and here again care must be taken not to contaminate food. Where DDT has not proved satisfactory, Lindane has been tried with fairly good results.

Tree Surgery

In 1951 there were 156 licensed tree men in Maine. Of this number 67 had complete coverage for spraying, pruning, and cavity work and 89 held limited licenses in either one or two phases. In 1952 there were 145 licensed men with 65 holding complete licenses and 80 holding limited licenses. During 1951, 31 of these were living out of state, and in 1952, 34 were from out of state.

There was a large drop in the number taking the examinations during 1951 and 1952 from the previous two years. During 1951, 18 took the examination with 5 failures; in 1952, 16 took the examination with 3 failures.

A number of cases of violations were reported during the biennium but fortunately these were taken care of by interviews and correspondence, and none had to go to court. No licenses were revoked during 1951-1952.

The Maine Arborists Association has become more active during 1951 and 1952. The annual meetings these two years were held in Portland at the YMCA with very interesting and informative speakers, and very good attendance. At the 1952 meeting it was voted that arborists give one day to repair the shade trees at the Hyde Memorial Home in Bath as a free will project. This was carried out Sunday, June 8, with a great many present, and a great deal of work was done.

Publications

1. Forest and Shade Tree Aphids, H. B. Peirson, Important Tree Pests of the Northeast, Tree Pest Leaflet No. 40, 3 pages, Revised 1951.
2. Arborvitae Leaf Miners, A. E. Brower, Important Tree Pests of the Northeast, Tree Pest Leaflet No. 46, 4 pages, Revised 1951.
3. Eastern Spruce Bark Beetle, R. W. Nash, Important Tree Pests of the Northeast, Tree Pest Leaflet No. 14, 4 pages, Revised 1951.
4. Pales Weevil, H. B. Peirson, Important Tree Pests of the Northeast, Tree Pest Leaflet No. 13, 4 pages, Revised 1951.
5. Studies on Extensive Dying, Regeneration, and Management of Birch, R. W. Nash, E. J. Duda, and N. H. Gray, Maine Forest Service Bulletin No. 15, 82 pages, 1951.
6. Forest Insect Notes, H. B. Peirson and Staff, Nos. 1-3, 1951.
7. The Spruce Budworm in Maine with Special Reference to Surveys. Mimeographed report. Maine Forest Service and U.S.D.A., Bureau of Entomology, 18 pages, 1951.
8. Forest Trees of Maine, H. B. Peirson, Seventh Edition, 88 pages, 1951.
9. Progress Report—Birch Studies 1951. Mimeographed report, G. A. LaBonte and R. W. Nash, 1951.
10. Field Book of Destructive Forest Insects, H. B. Peirson, Sixth Edition, 29 pages, 1952.
11. The Spruce Budworm in Maine with Special Reference to Surveys; Mimeographed report, Maine Forest Service and U.S.D.A., Bureau of Entomology, 22 pages, 1952.
12. Forest Insect Notes, H. B. Peirson and Staff, Nos. 1-4, 1952.
13. Forest Insect Survey of Maine, A. E. Brower, Journ. of Econ. Entomology, pages 363-364, 1953.

WHITE BIRCH REPRODUCTION ON BURNED AREAS OF 1947 IN SOUTHWESTERN MAINE

In October 1947 fires ran over about 151,000 acres of land in southwestern Maine of which 130,000 acres were forest land in the following areas:

Fryeburg-Brownfield fire (Oxford Co.) 20,120 acres.

Newfield-Shapleigh-Alfred-Lyman fire (York Co.) 109,110 acres.

Biddeford-Kennebunkport fire (York Co.) 21,910 acres.

Following these fires much interest has been centered on the resulting reproduction. With the appearance of large quantities of white or paper birch there has been considerable discussion as to whether this species was desirable or would mature as a valuable crop tree. There seems to be little question of its maturing well in the Fryeburg-Brownfield fire area. Thus in this discussion that area is being omitted.

A major survey was made of the burned areas in June 1949 primarily to obtain definite knowledge of the extent and character of the restocking thereon. The results were published in a very comprehensive report entitled "Restocking Conditions on the Burned-Over Forest Lands of Southwestern Maine, June 1949" by Wayne G. Banks and James C. Rettie as Station Paper No. 30, October, 1949, of the Northeastern Forest Experiment Station, Upper Darby, Penn. In this paper the species of reproduction classed as "desirable" in the area include white and red pine, hemlock, red and black spruce, balsam fir, white and red oak, white and black ash, yellow birch, sugar maple, and beech. They add that white birch has not been included in this list since it does not seem to develop a desirable form over a large portion of the burned area and that "nowhere in the body of the report, however, has the acreage stocked with white birch seedlings been considered as stocked with desirable species." That they were not entirely unfavorable to birch was noted at least twice where they wrote that fairly extensive areas well stocked with and well adapted to red maple and white birch will probably produce a merchantable crop and should logically be left alone. A late revision of their original ideas, given at the conclusion of this paper, should be read.

Others who have expressed doubt verbally as to white birch amounting to anything in southwestern Maine have said that

birch would not only be of poor form and short bodied but that it would be of poor quality for mill working, that it would have a high percentage of red heart, that it would be very slow growing on such sandy lands, and that the absence of extensive stands in the region indicated lack of suitability for birch.

Those, therefore, holding the above views show they not only believe that birch will amount to little if anything but leave the inference that where possible it would be better to try to replace it with other, more valuable, species.

For many years white birch has been one of Maine's most valuable forest trees. With its widespread death in recent years the hardwood industry in particular became acutely conscious of its value and supported a research program to find, among other things, means favorable to the regeneration of birch stands. Large areas of reproduction thus are of extreme importance and warranted our making observations on the possible success of birch in southwestern Maine.

Observations were made in September 1952, five years after the burn and when it was expected that reproduction would be established and would be indicative of its general growth and vigor. They were made on the Massabesic Experimental Forest, Alfred, Maine; which comes under the White Pine-Hardwood Research Center of the Northeastern Forest Experiment Station, U. S. Forest Service; in company with its Forest Manager, Thomas McConkey, as well as with Russell Hutnik of the said Research Center, Laconia, N. H. In addition discussions were attended by Victor Jensen, who is in charge of the Research Center. It was believed that group observation somewhat guaranteed consideration of a good cross section of conditions. The Forest with its sandy soils and location near the southern limit of the burn was thought to be certainly no more than an average representation of the burned area.

Observations consisted of looking over the birch reproduction on the burn; examining merchantable cut and uncut trees in unburned sections of the area for form, length of bole, apparent quality of wood, and red heart; study of increment cores of merchantable trees for age, rate of growth, and red heart; and concluded with an interview with operators of a long established birch mill nearest to the area.

White birch reproduction was found in adequate numbers over an appreciable area of the burn both where the burn destroyed

all of the original canopy as well as where a light to medium canopy remains. Seedling height varies; on the poorer sites it averages 3 feet, on much of the area it averages 5-6 feet with many specimens 7-8 feet, and on the best sites a good stocking of 9-10 feet specimens occurs. The general average for areas having sufficient stocking would fall around 5 feet. The general impression gained was that the reproduction was average for burned-over areas after five years' growth.

1952 twig growth was good in spite of severe summer drought; foliage was of good size and color especially for September. These and the general appearance of the seedlings all were indicative of good growth and soil conditions. Soil deficiencies for any species should be reflected in general appearance of the trees after five years. It was noted that red maple, in those areas where sapling or small pole-sized trees are of poor quality, look poor from seedling ages and up.

Small hemlock and white pine were common on the better, less severely burned sites. Some areas were grassy and under stocked with scattered white birch. In such places the white birch can be expected to remain limby and very short bodied and planting of other species as fillers would be in order. A number of areas have only gray birch, in other areas other hardwoods have sprouted thickly, and in some barren areas practically nothing occurs except patches of sweet fern with or without scattered gray birch or pitch pine. Poplar was noticeably scarce for a burned area.

Observations in unburned areas showed birch of all ages occurring mainly in mixture with white pine, hemlock, and red oak or other hardwoods. There were occasional small patches of white birch but no areas of pure birch were seen. Fresh stumps up to 12-16 inches diameter were observed with little or no red heart. The cutters and forest manager remarked on having cut considerable white birch during the summer that was of good quality, little red heart, and tall of body. Random roaming through the forest to observe the general quality of merchantable and smaller white birch showed it on the whole to look about average for the state. Length of bole commonly tended to be a little shorter than average for mixed growth stands. A large majority of the trees were of the tight-barked type with numerous, small, dark, surface areas. Ordinarily in more northern areas such an external condition would make one expect much red heart within

the tree but this was not borne out by inspection of stumps and increment cores.

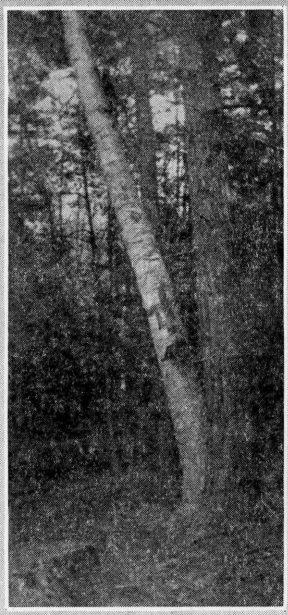
Several increment cores were kept for ring analyses which are given in Table I. Snapshots were taken of three trees, as indicated, for visual evidence to the reader.

TABLE 1
Age and Average Growth of White Birch
Massabesic Experimental Forest, Alfred, Maine
September 1952

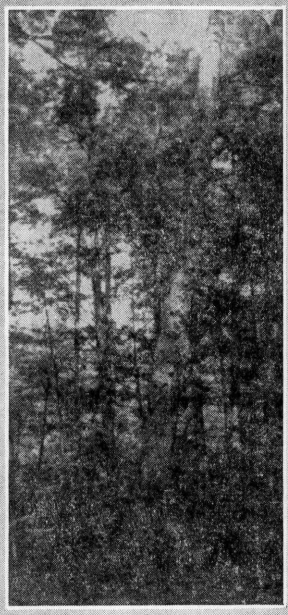
Tree No.	Diam. Inches	Age Years	Ave. annual radial increment inches 1929-1947 (State average .042 in.)	Ave. annual radial increment inches for past 5 years	Radial increment 1952 vs. 1951	Radial in. of white wood
1	8	33	.15	.08	up	all*
2	9	55	.04	.02	up	all
3	8	60	.042	.02	down	3.
4	11	64	.03	.017	up	5.
5	15	64	.07	.04	up	3.5
6	16	69	.075	.047	up	all
7	12	72	.04	.028	up	all
8	8	80	.03	.028	same	3.25
9	12	80	.036	.024	down	3.5
10	12	84	.05	.044	up	all
11	15	84	.045	.034	up	all
12	12	102	.031	.01	up	all
13	16	102	.035	.017	same	half
14	10	113	.014	.01	down	3.
Red oak	8	64	.05 (State average .06)	.044	same	
Red oak	6	115	.03	.04	up	
Hemlock	13**	114	.02 (State average—?)	.026	up	
Aver. for birch			.05			

*—all or practically all.
**—Hemlock taken because growing contiguous to birch #12. See photo A.

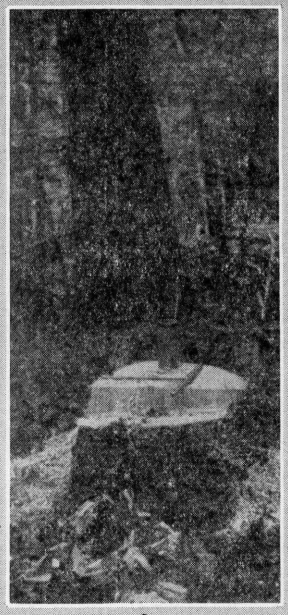
For the 14 birch represented in the table it can be seen that the average growth is somewhat above the State average. An average representative of these trees would figure 76 years of age for a tree of 12 inches which would be considered a good average for the State. These figures were obtained of course from individual trees growing in mixture. One perhaps should not expect such good growth in the potentially pure stands anticipated on the burned area as normally the best growth of individuals is with those in mixture. On the other hand these figures should be judged with the realization that the growth of birch throughout the State has been below average in recent years.



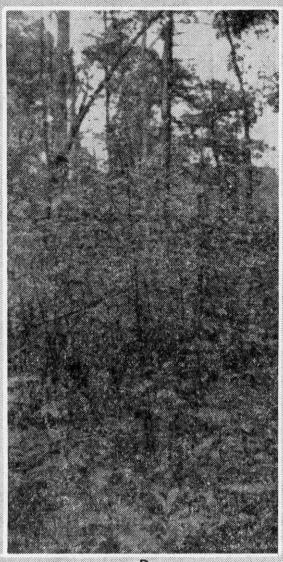
A



B



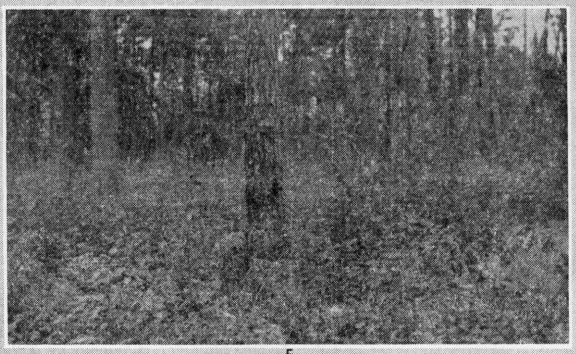
C



D

A, B, & C — White Birch Trees and Stumps. See trees #12, 13, and 6 respectively in Table 1.

D & E — White Birch Reproduction on Burned Area.



E

Following the woodland inspection, conversation was held with Messrs. Warren and Henry Saunders of the long-established Saunders Brothers Mill, Westbrook, Maine to see what they thought of birch from the Alfred-southwestern Maine area. To them there was no doubt at all about the possibilities of birch in that area from which they and their predecessors have obtained a limited volume of birch for years. It has been so-called "farm" wood i.e. wood bought in small lots already cut from farmers and small wood lot owners. They have known of no extensive stands warranting a company operation. They say that some of the birch does run "short bodied" but it averages well. The mill quality is good and they accept birch from there as quickly as from anywhere. The matter of sandy soil in the area was touched upon to which their reply was that it makes no difference. They cited in this connection the sandy plains around Sebago Lake where they have also obtained good birch for a long time. It was noteworthy to have them volunteer the information, which coincided with our observations around Alfred, that birch from both the Sebago and Alfred areas looks the same externally, practically all of it being tight-barked with black spots, which to them in more northerly areas is indicative of much red heart. The wood however is good and turns out to be good average birch as far as red heart is concerned. Incidentally Warren Saunders said that his father always referred to this tight, "black" barked birch as "Sebago" birch.

The final answer to the success of birch in the burned areas naturally lies in the future. One may conjecture about it but the best that can be done is to weigh the evidence there is available at present. Briefly it would seem from the foregoing presentation that white birch can be considered a desirable tree in southwestern Maine and that it will probably develop extensive stands on some of the burned over areas to produce a crop near the average of that from the rest of Maine.

Upon completion of this paper it was sent to Mr. Banks, referred to on page 135, for comment. His reply was that they had made a resurvey of restocking conditions and also made other observations of birch in the burned areas in late 1951. From this work they revised their previous conclusions and considered white birch a desirable species through the area. It is therefore highly significant that from two totally independent surveys conclusions agree as to the prospects for white birch. The report of their re-

survey has been issued as "The Southeastern Maine Fire-Area—Four Years Later," Northeastern Research Notes No. 18: Dec. 1952. Northeastern Forest Experiment Station—by Wayne G. Banks and Myron D. Ostrander.

A side issue of this subject and one which is seemingly a question to many is that of white birch vs. white pine. It does seem to be common in the area that where one is found, the other is also. Should one be favored over the other insofar as cultural treatment is concerned or will they both be able to mature in conjunction with each other? While no answer is known at this early stage it does seem that if a dense cover of white birch maintains itself over white pine, the pine will not be able to succeed. With a light to medium covering or in any place where the top of the pine is getting open sunlight it should come through and develop a crop with the birch. In the usual case observed the birch was taller than pine. If it is desired to remove birch to release pine it is probable that this could be done to give the pine its headway by a partial removal of birch sufficient to release enough for a crop of pine alone or sufficient to obtain both a crop of birch and pine. Each would help self-prune the other while growing. The best answer as to how much pine releasing, if any is needed, and how best to do it is being tried by the Massabesic Experimental Forest, Alfred. They may have some leads since they are running experiments to find these answers as well as to learn what age is best to release pine.

Maine Forest Service
Augusta, Maine—December 1952
Robley W. Nash, Senior Entomologist

WHITE PINE BLISTER RUST CONTROL

White pine blister rust, caused by a fungus disease, Cronartium ribicola, Fischer, was found on pines in the State of Maine as far back as 1916. This Asiatic disease was unintentionally introduced into the United States by importation of white pine seedlings grown in European nurseries and by introduction of cultivated specimens of European black currants. Conditions were ideal for its development, since both host plants essential to the spread of the disease were present in abundance. These are the five-needled or white pines and all species of currant and gooseberry, known collectively as ribes.

The spread of the disease has now reached practically all of the white pine growing regions of the United States and Canada. Yearly it is taking its toll on unprotected areas of white pines in all stages of growth. Young growth usually suffers higher losses due to greater susceptibility and less resistance to the disease. At the present time it is found throughout the white pine region of Maine, varying in intensity from light, scattered infections to heavy concentrations approaching 100% by stem count. Infection on controlled areas does not approach the latter condition and if present, is due chiefly to infection established prior to control workings. This disease has an interesting life cycle, part of which is spent on white pine and the remainder in the leaf tissue of currant and gooseberry plants. White pine blister rust does not spread from pine to pine. Diseased white pines continue to produce spores or minute seed bodies each spring as long as there is life in the host plant. Spores reaching currant and gooseberry develop in the leaf tissue, finally developing in the late summer another type of spore which is capable of producing the disease in white pine. These spores are wind-borne and have only a short infection range, generally not exceeding 900 feet from their source. The disease attacks the white pine by entering through the needles whence it works through the bark of the branches, eventually reaching and girdling the main trunk.

Climatic conditions play an important part in the spread of the disease. Seasons of extreme moisture are more favorable for its development. In regions where ribes have not been removed, nearly 100% infection may be found. Once established in a pine lot, a high degree of infection may develop in a few years unless control measures are applied in time.

Since the disease requires two hosts to develop, and cannot spread directly from one pine to another, control is possible by removal of all currant and gooseberry plants from a pine area and for a distance up to 900 feet around the pine.

The importance of white pine to the State of Maine is clearly indicated in the 1951 timber cut report compiled by the Maine Forest Service. This report shows a total of 336,655,278 board feet of white pine lumber produced, or 67.9% of all softwood timber cut in the state. At a stumpage price of $13.00 per thousand board feet, this represents $4,368,000 to pine owners of the state. At a log run price of $70.00 per thousand, the value of white pine lumber cut in 1951 was approximately 23½ million dollars. In addition, 99,371 rough cords of white pine were produced for pulpwood. The logging, milling, and manufacturing of white pine furnishes employment for many thousands of workers. Undoubtedly it is the most valuable renewable asset of southern Maine. The virgin growth is gone but there are thousands of acres of reproduction which, if protected from fire, insects, disease, and improper cutting practices, will supply our future requirements.

Throughout the commercial range of white pine in this country and Canada, foresters and timberland owners are concerned over the presence of white pine blister rust. In order to establish control of the disease within the pine growing regions, the federal government, together with the various states, counties, towns, and individual pine owners, has been carrying on a cooperative control program. As far back as 1917, the State of Maine began a definite program of control. No one can say what the blister rust situation would be today if continued control efforts had not been made.

Under a mutual working agreement between the Bureau of Entomology and Plant Quarantine of the U. S. Department of Agriculture and the Maine Forest Service, the federal government provides technical supervision and educational programs through the services of three district leaders. Additional federal funds were provided on the basis of total cooperative funds made available by state, town, and private individuals. These funds were used for preparatory programs and for employment of labor in cooperating towns during the eradication programs.

General supervision and coordination of control activities was furnished under the direction of P. H. Simmonds, Area Leader,

with headquarters at the Maine Forest Service, in Augusta. District supervision was furnished by the following federal personnel: H. G. Bradbury, Jr., Post Office Building, Belfast; M. G. Calderara, 53 Court Street, Auburn; and J. B. Pike, Jr., 40 Main Street, Bridgton.

During the 1951-52 control seasons, 83 towns in 13 counties made $33,850 available for eradication of ribes. Actual expenditures amounted to $32,743.47. The unexpended balance of town funds is principally due to lack of suitable labor where needed. The following summary shows appropriations, expenditures, and acreages worked by towns:

County and Towns	1951			1952		
	Appropriated	Expended	Acres Worked	Appropriated	Expended	Acres Worked
Androscoggin						
Leeds	$200.00	$199.50	1,854	$200.00	$199.60	1,679
Lisbon	200.00	199.59	1,116	....	....	....
Livermore	200.00	195.45	2,084	200.00	199.75	1,491
Poland	300.00	300.00	3,564	300.00	299.85	2,108
Turner	200.00	199.93	3,741	200.00	199.95	1,436
Cumberland						
Bridgton	....	....	....	300.00	299.89	3,704
Cumberland	300.00	299.40	2,523	200.00	199.80	1,437
Falmouth	300.00	299.05	2,292	300.00	299.97	3,715
Gorham	400.00	355.80	6,273	400.00	398.62	4,009
Gray	200.00	199.85	3,155	200.00	199.89	2,656
Harrison	....	....	....	300.00	293.85	4,039
Naples	300.00	298.30	5,955	300.00	299.36	4,926
New Gloucester	300.00	299.77	4,383	300.00	299.67	3,027
Otisfield	200.00	199.58	2,698	200.00	204.75	3,087
Scarboro	....	....	....	300.00	299.76	3,522
Standish	400.00	399.65	3,323	400.00	399.52	2,328
Westbrook	....	....	....	400.00	399.66	5,237
Windham	400.00	399.90	3,575	400.00	399.81	2,596
Yarmouth	300.00	299.90	2,179	150.00	145.48	928
Franklin						
Chesterville	200.00	197.90	2,293	200.00	135.70	5,034
Kingfield	200.00	102.60	5,771	....	....	....
Weld	....	....	....	100.00	68.80	1,811
Kennebec						
Albion	300.00	299.92	2,988	....	....	....
Belgrade	300.00	299.72	1,500	300.00	299.89	2,175
Benton	300.00	299.63	704	....	....	....
Manchester	200.00	200.00	1,534	200.00	189.50	1,327
Oakland	....	....	....	400.00	399.93	1,815
Rome	200.00	198.40	1,365	200.00	199.93	2,145
Sidney	150.00	150.00	1,235	150.00	149.99	1,970
Vassalboro	300.00	299.87	1,335	300.00	299.90	2,092
Vienna	100.00	99.25	50	....	....	....
Wayne	100.00	99.75	690	....	....	....
Knox						
Camden	....	....	....	400.00	399.67	1,740
Warren	200.00	199.95	741	400.00	399.62	3,707
Washington	....	....	....	300.00	299.69	3,017
Union	....	....	....	200.00	199.78	1,939
Lincoln						
Damariscotta	....	....	....	300.00	299.91	1,651
Jefferson	....	....	....	300.00	299.93	1,695
Newcastle	300.00	264.80	1,447	300.00	297.64	1,839
Somerville Pl.	....	....	....	100.00	99.84	1,790
Wiscasset	....	....	....	200.00	199.70	2,049

County and Towns	1951			1952		
	Appropriated	Expended	Acres Worked	Appropriated	Expended	Acres Worked
Oxford						
Bethel	$300.00	$128.00	6,149	....	....	....
Canton	300.00	300.00	4,308	$200.00	$199.27	1,562
Denmark	....	....	....	200.00	199.52	10,545
Lovell	....	....	....	400.00	399.80	9,993
Norway	500.00	500.00	3,692	500.00	498.97	5,349
Oxford	....	....	....	400.00	398.51	2,102
Porter	300.00	298.16	3,013	300.00	299.16	4,625
Penobscot						
Greenbush	*100.00	....	....	200.00	199.97	2,291
Hampden	....	....	....	400.00	399.95	1,370
Lee	....	....	....	300.00	299.90	1,818
Orrington	....	....	....	400.00	393.55	1,375
Piscataquis						
Abbot	....	....	....	400.00	393.00	725
Dover-Foxcroft	400.00	400.00	2,529	200.00	184.56	130
Guilford	400.00	398.97	1,982	....	....	.....
Milo	400.00	399.40	1,105	....	....	....
Parkman	100.00	99.91	1,185	100.00	90.48	372
Sagadahoc						
Bowdoinham	200.00	199.90	869	....	....	....
Richmond	300.00	299.85	5,380	....	....	....
Topsham	300.00	299.82	3,602	300.00	299.90	3,292
Woolwich	....	....	....	300.00	299.72	3,392
Somerset						
Bingham	200.00	199.73	2,531	....	....	....
Embden	....	....	....	300.00	300.00	1,810
Harmony	300.00	299.87	1,468	....	....	....
Madison	....	....	....	400.00	399.85	3,390
Moscow	....	....	....	400.00	326.00	1,180
New Portland	....	....	....	400.00	400.04	1,800
Norridgewock	400.00	400.00	3,053	400.00	399.92	2,642
Pleasant Ridge	....	....	....	400.00	118.56	390
Skowhegan	400.00	399.40	3,335	400.00	396.72	1,000
Starks	....	....	....	200.00	199.97	1,670
Waldo						
Brooks	100.00	99.66	616	100.00	99.96	885
Liberty	300.00	300.00	1,441	....	....	....
Monroe	100.00	99.75	633	100.00	100.00	546
Searsmont	200.00	199.95	667	200.00	199.95	645
Unity	300.00	299.75	950	300.00	300.00	755
Winterport	....	....	....	400.00	399.94	1,515
York						
Biddeford	....	....	....	500.00	488.92	3,033
Buxton	300.00	299.10	1,218	300.00	299.40	1,728
Hollis	300.00	298.60	1,830	300.00	299.70	3,039
Kittery	300.00	240.00	6,479	....	....	....
So. Berwick	300.00	297.40	4,975	300.00	266.80	2,932
Wells	300.00	298.20	7,217	....	....	....
Totals	$14,450.00	$13,912.88	140,595	$19,400.00	$18,830.59	167,622

*Held over for 1952

Town funds were supplemented by state and federal funds.

Federal expenditures for blister rust control were approximately $25,408, while state expenditures totalled $26,563.72 during the biennial period.

Summary of Eradication Accomplishments

	1951	1952
Number of acres worked	144,563	170,133
Number of acres pine protected	53,409	73,570
Number of ribes destroyed	347,407	480,538
Ribes per acre	2.4	2.8
Man-days of labor	3,703.3	4,533.8
Acres per man-day	39.0	37.5

Following is the status of the program at the close of the biennial period:

Total acreage of control area	2,328,247
Acreage detail mapped	2,151,571 or 92.4% of C.A.
Acreage initially eradicated	2,193,349 or 94.2% of C.A.
Acreage worked twice	1,437,354 or 61.7% of C.A.
Acreage placed on maintenance	1,252,559 or 53.8% of C.A.

Control area mapping and pre-examination of ribes conditions are a prerequisite to an efficient eradication program. This requires initial mapping and re-mapping necessary to adjust changing control area boundaries. A pre-eradication program to determine the presence of ribes is advantageous in planning work to utilize labor in the most efficient manner. Specially trained scouts are assigned to this work, resulting in a much reduced per acre cost for control. Crew labor is assigned to concentrations laid out by these scouts.

Under the present cooperative agreement, town funds are matched with state and/or federal funds. This has restricted the control program mainly to cooperating towns, due to the limited amount of state and federal money available, and has resulted in advancing the program well toward maintenance in many cooperating towns, while first and second workings are still incomplete in non-cooperating towns.

Additional state funds were available during the biennium to provide for a four-month mapping program each year in all districts. This was a definite advantage in furnishing the necessary maps for control work. There was still need for additional mapping during the eradication season to provide all maps required.

As indicated in the foregoing summary, over 92% of the present control area has been detail mapped. However, much of this mapping is now obsolete, and the required re-mapping is still a major item in the over-all program.

The blister rust disease has been established on pines and ribes throughout Maine for many years. During the 1920's and 1930's, heavy damage occurred in unworked, young stands of pine. Today, much of this pine has been killed and the trees either salvaged or have blown over, leaving no evidence of their presence. We are still faced with the problem of establishing and maintaining protection in young stands. Once established, blister rust takes heavy toll of white pine reproduction. Continued studies in

young pine stands on check plots taken in worked areas show definite proof that control is being established by removal of ribes plants.

Information and service work is an important part of the program. Reports were made to town officials on accomplishments, status of the program, and future needs for control work. Information was made available to the public through newspapers, by motion pictures, field demonstrations, exhibits, and distribution of blister rust bulletins. Special activities included blister rust talks at Forest Service personnel meetings, and at the University of Maine summer forestry camp. The latter included a field demonstration trip.

A blister rust display was placed in the Maine Forest Service exhibit at the Eastern States Exposition in Springfield, Mass. Attendants were on duty throughout the week.

For the first time in a number of years, an inspection was made of the State Forestry Nursery at the University of Maine in Orono. This inspection also included the recently established annex and surrounding control zone. One escaped red currant was removed from the nursery proper, and a number of wild ribes were removed from the control area surrounding the annex. A re-check of this control zone was recommended for 1953.

The objective of the blister rust control program is to establish maintenance on the maximum amount of control acreage in the shortest possible time. Such conditions are brought about when through control efforts or natural causes, the ribes population is reduced to less than 4 bushes per acre in scattered distribution. Disturbances through cutting, fire, or other causes tend to reestablish ribes and delay such a classification.

Blister rust control activities during the biennial period have resulted in the following accomplishments: Net control area has been reduced through control area examination and mapping by 114,453 acres. This is a more accurate recording of existing control area. Acreage needing initial work has been reduced from 161,900 to 144,998, or 7.6% of net control area. Second and other workings have been increased by 162,392 acres. Acreage placed on maintenance has increased by 229,759. For the first time in the program's history, acreage on maintenance has exceeded the 50% mark. There are 1,252,559 acres on maintenance, which is 53.8% of the total control area.

Detail mapping has been completed on 92.4% of the control area. However, much of this is in need of revision and will require considerable time to complete. Efforts will be made during the coming biennial period to increase the amount of mapping and control area examination with the use of state and federal-paid men.

FARM (SERVICE) FORESTRY

W. Robert Dinneen, Supervisor

Farm forestry is conducted under a cooperative agreement with the Forest Commissioner, Maine Forest Service, and the U. S. Forest Service of the Department of Agriculture.

The purpose of this cooperative program is to provide specific in-the-woods assistance to the small woodland owner. Working with the owners the farm forester assists in marketing of the timber and marking the trees to be cut. If necessary, a management plan for the area is made covering all phases of handling woodlands according to good forestry practices. Information on planting, thinning, pruning, protection from fire, and grazing may be included in the management plan. Showing the owner how to carry out the various forestry practices and instructing him in the procedures to be followed, and then checking to see that the recommendations are understood and are being properly applied, are also part of the work.

This is essentially a service program and the major portion of the foresters' time is spent in the field serving requests for woodland assistance. The office of the forester is maintained at his own home and heat, light, and space is furnished at no cost to the state. In addition, all clerical and office work is performed by the foresters themselves. Because of these conditions practically 100% of the farm forestry appropriation is expended on direct forestry promotion and none on auxiliary services. All farm foresters furnish their own cars.

Personnel

During the period of the last biennial report, 1949-1950, 2 farm foresters were employed: Sumner Burgess, Dixfield, covering Oxford, Androscoggin, and Franklin Counties; and W. Robert Dinneen, Bridgton, covering York, Cumberland, and Oxford Counties.

In July 1950 with the increased state appropriation, 4 additional farm foresters were employed. At this time the amount of federal participation for the year had not been determined. Therefore, it was not possible to start the entire enlarged program as originally planned. The participating money received from the U. S. Forest Service came late in the year and in sev-

eral installments. As a result, 3 additional foresters were employed early in 1951. Careful budgeting of farm forestry funds permitted hiring another forester in August of 1952, making a total of 9 farm foresters and 1 supervisor employed at this time.

The following table shows the names and addresses of the farm foresters and the territories in which they work. In order to equalize area and work loads, it will be noted that districts do not adhere strictly to county lines, but that each forester may have parts of several counties in which to work:

Forester and Address	Territory
Richard W. Arsenault 341 Lower Main St. Sanford, Maine	All of York County
Stephen Orach RFD 2 Gorham, Maine	All of Cumberland County Oxford County—Porter, Hiram, Denmark, Brownfield, and Fryeburg
Sumner Burgess Box 308 Dixfield, Maine	All of Oxford County except 5 towns All of Franklin County except 4 towns Androscoggin County—Livermore Falls, Livermore, Turner, Minot, Mechanic Falls, Poland, and Auburn
William J. Adams 14 Western Avenue Augusta, Maine	All of Sagadahoc County Kennebec County—Fayette, Mt. Vernon, Belgrade, Sidney, Vassalboro, China, Windsor, Augusta, Manchester, Readfield, Wayne, Winthrop, Monmouth, Litchfield, Hallowell, Farmingdale, West Gardiner, Gardiner, Chelsea, Randolph, and Pittston Androscoggin County—Leeds, Greene, Wales, Lewiston, Webster, Lisbon, and Durham Lincoln County—Dresden, Whitefield, Jefferson, and Somerville Waldo County—Palermo and Liberty Knox County—Washington
Robert Umberger Box 505 Warren, Maine	Knox County—Appleton, Hope, Camden, Union, Rockport, Warren, Rockland, Thomaston, South Thomaston, Owl's Head, Cushing, Friendship, and St. George Lincoln County—Alna, Newcastle, Nobleboro, Waldoboro, Wiscasset, Damariscotta, Bremen, Edgecomb, Bristol, South Bristol, Westport, Boothbay, Southport, and Boothbay Harbor Waldo County—Freedom, Knox, Brooks, Swanville, Prospect, Stockton Springs, Searsport, Montville, Morrill, Waldo, Belfast, Searsmont, Belmont, Northport Lincolnville and Islesboro

Forester and Address	Territory
Robert Lawrence RFD 3 Skowhegan, Maine	All of Somerset County Waldo County—Unity, Thorndike, Burnham, and Troy Franklin County—New Vineyard, Industry, New Sharon. Kennebec County—Vienna, Rome, Oakland, Waterville, Winslow, Albion, Benton, Unity, and Clinton
Elwin Macomber 96 Harlow Street Columbia Market Building Bangor, Maine	Penobscot County—Maxfield, Mattamiscontis, Lincoln, Howland, Enfield, LaGrange, Edinburg, Passadumkeag, Lowell, Burlington, Alton, Argyle, Greenbush, Summit, Grand Falls Pl., Old Town, Milford, Greenfield, Orono, Bradley, Bangor, Veazie, Eddington, Clifton, Brewer Holden Orrington, Dexter, Garland, Charleston, Bradford, Corinna, Exeter, Corinth, Hudson, Newport, Stetson, Levant, Kenduskeag, Glenburn, Plymouth, Etna, Carmel, Hermon, Dixmont, Newburg, and Hampden Waldo County—Jackson, Monroe, Winterport, and Frankfort Hancock County—T 32 MD, Amherst, Mariaville, Waltham, Bucksport, Dedham, Otis, Verona, Orland, Ellsworth, T 8 SD, Penobscot, Surry, Hancock, Lamoine, Trenton, Castine, Brooksville, Bluehill, Sedgwick, Brooklin, Deer Isle, Stonington, N. Haven, Vinalhaven, Isle au Haut, Swan Island, Bar Harbor, Mt. Desert, Southwest Harbor, Tremont, Cranberry Isle, and Long Island Pl.
Harold Kilbreth, Jr. 71 Court St. Machias, Maine	All of Washington County except 9 towns Hancock County—T 3 ND, T 4 ND, T 39 MD, T 40 MD, T 41 MD, 33 Plantation, T 34 MD, T 35 MD, Aurora, T 28 MD, Osborn Pl., T 22 MD, Eastbrook, T 16 MD, Franklin, T 9 SD, T 10 SD, Sullivan, Sorrento, Gouldsboro, Winter Harbor, T 7 SD Penobscot County—3 R 1, 5 R 1, Lakeville Pl.
Edwin S. Gerry Island Falls, Maine	All of Aroostook County Penobscot County—8 R 6, 7 R 6, 6 R 6, Mt. Chase Pl., Patten, Stacyville, Herseytown, 1 R 6, Medway, Soldiertown, Grindstone, Millinocket, E. Millinocket, A R 7, Woodville, Mattawamkeag, Kingman, Drew Pl., Winn, Webster Pl., Prentiss Pl., Lee, Springfield, Carroll Pl. Washington County—8 R 4, Forest City, Danforth, 8 R 3, Brookton, Forest, Kossuth, Topsfield, and Codyville Pl.

Training

All farm foresters employed must be graduates of a four-year course in forestry from an accredited college. The nature of farm

forestry, however, calls for additional training to acquaint them with local conditions with regard to markets, logging conditions and practices, tree species and distribution, and timber marking practices adapted to their districts.

At the start of the enlarged farm forestry program an intensive two-week field training school was held. Foresters employed since that time have been given a one-month training course working with other farm foresters in the various districts to become acquainted with the technique of the job and work methods employed. These types of training schools have worked out well.

Training sessions are now held twice each year within the state, usually in the late fall and early spring. Problems encountered during the previous months are discussed. Improved work methods and techniques are demonstrated by the foresters and each is assigned specific topics on which to report. Due to the varied nature of the work and the fact that information on it must be kept current, it is necessary to cover a large number of subjects at each meeting. The following are a few of the topics covered at each meeting: market conditions and prices, new utilization practices, cooperation with other government agencies, new technical information on forestry, etc.

Once each year the farm foresters of New England and New York gather for a three-day training conference. This year the meeting was held at Stow, Vermont. At these meetings, some of the best known and experienced foresters in eastern United States give lectures and demonstrations. They have proven an excellent means of training.

At the 1952 Farm and Home Week at the University of Maine, the farm foresters were able to attend two short courses given especially for them through the generosity of the faculty. One was on newspaper writing and the other on public speaking. Both are subjects used constantly in the farm forestry program.

The supervisor checks the work of the foresters in the field and aids them with problems as they arise.

Cooperation

The task of promoting and improving forest management on private woodlands is so large that the cooperation of all government and private agencies working with the landowner is necessary to accomplish the maximum results. As a number of agen-

cies are interested in the farm forestry program, it is necessary that there be coordination of efforts and uniformity of recommendations and procedures. The farm forester devoting all of his time to forestry activities is able to aid in this phase of the work.

The farm forester worked with the Extension Service through their county agents and extension forester in carrying on their educational program in forestry. He aided them at their field demonstrations, helping locate areas where good forestry work has been accomplished and helping in the general demonstrational work. The farm forester also assisted the county agent on requests he receives for aid requiring service work in the form of marking timber to be cut, information on local markets and prices, and related work.

The farm foresters worked with the Soil Conservation Service in planning the program for farm woodlands. They worked with the farmer promoting the execution of this plan into an active program of cutting on his woodlot. They also worked with the Soil Conservation Service technicians and the farmer on tree planting recommendations for non-agricultural areas of the farm.

The farm foresters aided the Production and Marketing Administration of the U. S. Department of Agriculture in its program for woodland improvement practices and tree planting. As this agency does not employ forestry technicians, the farm foresters did all the work of contacting, instructing, and checking of the forestry work done under this program. They participated in all training meetings of the employees of the agency and conducted field demonstrations showing the type of woodland work accomplished. Since the enlargement of the farm forestry program in 1951, a significant increase in farmer participation and forestry standards can be observed in the new areas.

The farm foresters, at the request of the Farm Home Administration of the U. S. Department of Agriculture, have contacted their clients on the correct handling of their farm woodlands. Their aim has been to obtain the best possible financial return immediately, consistent with long range forest management practices.

With the exception of Aroostook County, the farm foresters have contacted every school that teaches vocational agriculture and cooperated with the instructor in teaching a short course in

forestry, consisting of both classroom and field instructions. It is planned to continue this work every year so that all classes will have the benefits of this instruction. Due to the fact that a forester has not been available the entire time and that there are so many schools teaching vocational agriculture in Aroostook County, it has not been possible in the past year to contact them all. A start has been made, however, and all schools will be contacted the coming year.

The Maine Forest Service wishes to thank all of these agencies for their cooperation. Their assistance in furnishing names of persons interested in obtaining woodland advice and service was an aid to the success of the program.

Public Relations

An informed public is the keystone to the success of any program. The farm foresters have endeavored to keep the public abreast of the progress of their work, why the need for good forest management is so important to the state, and of the latest forestry information and techniques. This has been accomplished by all means at their disposal. They have contributed to newspapers giving local interest stories of accomplishments in the area. They have participated in radio programs, especially those dealing with farmer interest programs. Many requests have been filled by farm foresters as speakers at Grange meetings, service clubs, and other organizations. They have been active in promoting Keep Maine Green and the Tree Farm movement.

With the experience that has been gained since the start of the program and with the training they have had available, it is felt that during the coming years they will be able to take an even more active part in the public relations program.

Accomplishments

The following table gives a summary of a few of the statistical accomplishments of the farm forestry program for the period July 1, 1951 to December 30, 1952. It is felt that results are outstanding in view of the fact that all but one of the men were new to this type of work. It was necessary to train them in small woodlot techniques and have them get acquainted with the territories to which they were assigned, to know roads, people, cooperating agencies and personnel, markets, prices, utilization, and other information necessary to successfully promote their work:

ACCOMPLISHMENT REPORT—SERVICE FORESTRY PROJECT—MAINE FOREST SERVICE
July 1, 1951 to December 31, 1952

Project Name	Unserviced Requests 12-31-52	Forest Products Operators Advised	Number Landowners given Mgt. Asst.	Acres of Woodland Involved	Timber Marked for Cutting			Total Volume Harvested (Converted to board feet)	Total Acres Harvested	Stumpage Returns to Landowners	Gross Returns (Stumpage & Labor)	Man Months Project Operated
					MBF[1]	Cords	Acres					
Androscoggin.	57	49	348	12,602	4,757	1,850	829	813	3,849	52,200	76,790	18
*York.....	63	1	154	4,485	477	403	284	30	487	2,520	5,611	12
*Rockland.....	289	48	154	6,697	727	236	523	108	232	2,131	2,846	10
Augusta.....	73	5	296	5,045	3,881	1,879	1,283	252	1,177	13,366	15,606	18
Cumberland..	213	43	418	9,910	5,215	2,489	2,053	969	3,730	51,832	73,308	18
*Skowhegan...	96	13	180	7,933	896	551	339	163	447	5,298	7,433	11
Bangor.....	57	29	422	24,046	1,277	3,282	1,331	498	2,803	27,999	49,857	18
*Aroostook....	144	3	203	5,097	37	408	97	226	576	5,740	17,128	12
*Washington...	47	1	55	6,157	69	257	95	—	—	—	—	4
Totals....	1,039	192	2,233	81,972	17,336	11,355	6,834	3,059	13,301	161,086	248,579	

[1] MFB—1,000 Board Feet.
*These projects were not operated for the full period. See last column for time operated.

Below are a few experiences of the farm foresters as to how the program is progressing in their areas:

Forester #1. A sawmill man was contacted during the summer of 1951. At that time the forester explained what his services were and how mill men interested in the future of our timber supply could help. Whenever possible the forester would stop and talk to the mill operator. Finally a timber lot near the sawmill was marked for cutting by the forester and was purchased by the sawmill owner. No unusual problems were encountered in logging the timber. In fact, the logging crew was surprised at the ease of cutting and logging on a selective basis. This fall the forester received a request from the mill operator asking him to mark a lot for him to cut. He had a chance to clear cut the lot but had convinced the landowner it should be marked for a selection cut.

Forester #2. A short time ago it was brought to the attention of the farm forester that a town was putting up 7 woodlots for sale. Realizing that these lots would probably be stripped and returned to the town for taxes, the forester was instrumental in getting the town to reconsider and hold the lots until the possibility of establishing a town forest was investigated. The town is now very much interested in this project and it is hoped that these lands will be saved to provide future jobs and income for the town.

Forester #3. Although the work area was reduced in size due to the enlargement of the farm forestry program, requests for assistance kept increasing. In July 1950, there were 8 requests on hand to be serviced; on July 1, 1951, 31 requests; and on July 1, 1952, 70 requests. This is an indication of the interest developed within this area in a short time. During the first year of the program all mills were contacted and only 5 bought marked stumpage. This year 21 have bought from 1 to 10 lots for selective cutting and many have had their own personal lots marked. The program has also stimulated many to do a better job of their own accord and at present 17 additional mills have shown more than common interest in better cutting practices. Several mill men have actively aided the forester in convincing the woodland owner to cut his lot selectively or have been instrumental in bringing the forester and landowner together.

Forester #4. In this project area one of the pulp mills has been most cooperative. A market for pine pulpwood had recently

opened up due to new technical processes. Due to the small sizes that can be used for pulpwood, this posed a potential threat to our lumber industry in this area. The pulpwood company met its problem in a courageous and progressive manner. At public meetings it advocated cutting of pine pulpwood from stands as a thinning or improvement measure. It has cooperated with the farm forestry program in accepting all pulpwood produced in such a manner from selectively cut lots of our cooperators. It is hoped that this example will interest other pulp mills to cooperate in a program of this type.

Equipment

The cost of equipping a farm forester is approximately $300.00. His main office equipment consists of a desk, filing cabinet, and typewriter.

In the field the following equipment is used constantly by the forester in promoting the work:

Paint Gun—used to mark timber for cutting.
Increment Borer—used to measure rate of growth of trees.
Log and Tree Ruler—used to measure tree and log volumes.
Pruning Saws and Shears—used to demonstrate tree pruning practices.
Measuring Tapes—used to lay out sample plots for estimating and sample plot purposes.

In addition to the above, equipment such as snowshoes, compasses, etc. are necessary to perform the work properly.

Recommendations

Maine's forests are its major and renewable resource. 75% of the state's income is derived from its timber in one form or another. To give adequate service and complete state coverage to all our forest landowners, it is recommended that 3 additional foresters be employed.

A very definite need is technical assistance to processors of primary forest products. It is recommended that an experienced forester be employed to aid processors in mill site selection and lay-out, selection of equipment, application of improved harvesting methods, and otherwise promoting the increased efficiency in the primary processing of forest products.

The teaching of forest conservation, integrated within prescribed courses, and at all grade levels, especially in rural areas,

would be a forward step in the promotion of the correct thinking about our forest resources and their importance to the state. This would call for no additional personnel or expenses but would work in with the regular teaching system.

KEEP MAINE GREEN

Joel W. Marsh, Supervisor

R. Leon Williams, of Clifton, was state chairman of the Keep Maine Green program during 1951-52. The forest commissioner served as secretary for both years. Joel W. Marsh, Maine Forest Service, was appointed on December 1, 1951 to act as executive secretary and supervisor of the Keep Maine Green program. It should be pointed out that one-half of the supervisor's time is assigned to the Keep Maine Green program, while the other half is assigned to Tree Farms and other activities. The supervisor spent the month of December 1951 and the month of January 1952 contacting all the county chairmen to become acquainted with the program. Their 1951 activities were discussed with them along with new ideas that might be proposed for the coming season. As in the past, it was the policy to have a Keep Green chairman for each county.

A.F.P.I. Assistance

L. C. Rawson, Northeastern District Manager, representing the American Forest Products Industries, made his services available both years and came to Maine on a number of trips to assist and cooperate. Mr. James McClellan, Forester, and Miss Alma Deane Fuller, Educational Specialist, both from the AFPI in Washington, each made a trip into Maine to assist with the program. The Washington office supplied Maine with Keep Green fire prevention literature as in past years. Records show that AFPI furnished Maine with over 130,000 pieces of literature in 1951 and over 155,000 pieces in 1952. Over 700 schools are receiving AFPI forest educational material to aid in their teaching programs.

U.S.F.S. Assistance

The U. S. Forest Service furnished Maine with a supply of fire prevention posters and materials for distribution. In 1951 over 80,000 pieces of literature were received and over 78,000 pieces in 1952. A part of this material was paid by CM-2 cooperative funds. Fire prevention moving pictures and radio platters were also available for use in theatres and radio stations featuring "Smokey" the fire prevention bear.

Feature Activity, 1951—Grange

The state chairman held a Keep Maine Green meeting in Bangor early in 1951 to start off the fire prevention season. There was a good attendance of county chairmen. A special attempt was made to cooperate with the 450 Subordinate and Pomona Granges in Maine in order to have them present to their members the Keep Green program. Mrs. Lottie E. York, State Grange Lecturer, of Winthrop, awarded a dark green ribbon to over 200 Granges participating in the program during 1951. Such meetings received the full cooperation of the Maine Forest Service warden personnel, the county chairmen, and others. Fire prevention posters and forest educational literature were provided for distribution, as well as movies and speakers furnished. Mrs. York awarded a rainbow ribbon to each Grange, Juvenile or Subordinate, entering a Keep Maine Green poster and story contest. Hundreds of posters were received and after screening, approximately 60 were presented for the final awards. 5 cash awards and 2 radios were presented to the winners by the Grange Herald at the State Grange Session in Bangor on December 4, 1951.

Feature Activity, 1952—Forest Conservation in Schools

A group of 50 interested teachers received instruction from Miss Alma Deane Fuller, Educational Specialist, American Forest Products Industries, Washington, D. C., at a conservation meeting arranged for the first time in the program of the Maine State Teachers' Convention held in Bangor on October 30-31, 1952. Miss Fuller gave the importance of introducing conservation into courses of study already given and discussed how the available material was best presented to children of all age groups. Following the instruction, group discussions were held and it was decided that in 1953 regional meetings would be held throughout the state to acquaint the teachers with the value of conservation. Special emphasis would be placed on forestry because of its importance to the state. The supervisor would be available to assist in these proposed meetings.

Committee Meetings—Activities

Following a successful annual Keep Maine Green meeting in Bangor early in 1951, 12 of the 16 county chairmen held committee meetings and conducted active programs within their areas. Besides cooperation with the Granges, emphasis was placed on

contacting schools and presenting to the teachers available educational material to promote interest in forest educational programs for the school children.

On February 5, 1952 an annual Keep Maine Green meeting was held in the Senate Chamber, State House, Augusta, with 50 present, county chairmen and interested persons. Forest Commissioner A. D. Nutting opened the meeting by introducing R. Leon Williams, the state chairman, who conducted the afternoon program. The 9 county chairmen present gave complete reports of their 1951 activities. The supervisor outlined the activities of the 7 county chairmen who were unable to be present.

Mrs. Bert McKenzie, of Orono, representing the Maine Federation of Women's Clubs, said they would like to cooperate in the future by assisting in sponsoring field trips, making exhibits, contact and promote forestry conservation in the schools, and any other way to benefit forest fire prevention forestry. A mailing list of club women representatives throughout the state was furnished the supervisor to speed up this cooperation. Mrs. Lottie E. York, Lecturer for the Maine State Grange, outlined the activities of the Grange and pledged that Granges would continue to sponsor Keep Maine Green programs during the coming year.

Mr. James McClellan, American Forest Products Industries, Washington, D. C. congratulated the Keep Maine Green committees and stressed the importance of continuing in this effort of fire prevention to reduce the man-caused fires in Maine. Both Howard L. Bowen, Associate Deputy of Elementary Education, and Earle Bradbury, Deputy Commissioner of Inland Fisheries and Game, gave their department's desire for closer cooperation in educating the children and adults of Maine in the importance of Keeping Maine Green.

All the important activities of this annual meeting were mimeographed and over 200 copies were mailed to interested persons throughout the state.

Following the annual meeting, and under the supervision of the supervisor, 13 of the 16 county chairmen were active in promoting fire prevention and forest conservation within their districts. 10 of these chairmen held meetings or contacted county committee members to further the program.

Decals

Truck and car Keep Maine Green decals were distributed upon request in 1951. Mr. E. G. Kelso, Hollingsworth & Whitney Com-

pany, Waterville, took over the duty of purchasing the car decals and distributing them at cost. Mr. Ralph Merrill, Penobscot Development Co., Great Works, was assigned to take care of distributing the larger truck decals. In July 1952, Governor Payne and the Council recognized Keep Maine Green by authorizing the use of decals for use on cars. To start the program off, the Maine Forest Service furnished decals to all state cars and vehicles, including the State Police.

Fire Fighting Training in Schools

In Kennebec County during 1951, special training of high school forest fire fighting crews was carried out at Kents Hill school and at Winslow school, sponsored by the county Keep Maine Green committee. In both cases the results were very successful with the Maine Forest Service personnel cooperating by giving instruction. In 1952 fire fighting crews were organized in Clinton and Oakland with plans for Albion to start in the near future. It is the hope that other high schools throughout the rural sections of the state will conduct similar program in the future, as it not only is a training program but it alerts all the children in each school to the importance of fire prevention.

Keep Maine Green Meetings

Over 700 fire prevention or Keep Green meetings were held at Granges, Men's and Women's Clubs, community fire warden meetings, and at schools during 1951-52. The Maine Forest Service personnel, along with some of the county chairmen, and representatives from industry, were active in talking fire prevention to these groups which was usually accompanied by movies. The supervisor alone was the guest speaker at 40 Granges who sponsored Keep Green programs during 1952. During 1951 the movie "Fire in the Forest" made 242 showings and the movie "Trees for Tomorrow" was shown 86 times. In 1952 forest educational movies were shown 321 times in various sections of the state. The movie "Fire in the Forest" was shown on 112 occasions, "Trees for Tomorrow" 85 times, "Building the Fire Line" 71 times, "River Run" 39 times, and "Campaign Fire" had 14 showings. The forest commissioner emphasized fire prevention at the spring training schools held in 1951 and 1952 for the field personnel of the department. He stressed the importance of distributing Keep Maine Green posters and leaflets and of talking fire prevention to everyone when making field contacts.

Exhibits

Wherever possible, fire prevention booths and exhibits were set up at fairs, sportsmen shows, and at large group meetings. During 1952 the department sponsored 10 major exhibits during the year, most of which featured fire prevention. Besides this, there were numerous smaller exhibits and window displays presented to the public, in various sections of the state.

At the request of the Androscoggin Keep Maine Green chairman, the supervisor cooperated with the Fish and Game Department in preparing a Keep Maine Green float which was displayed at the Dairy Day Parade in Lewiston on May 22, 1952. The float showed a green woodland with trees, and a black bear peering out; then a fire line and a burned over area. A legend around the float read, "Use Care When Burning. Don't Let this Happen to your Farm Woodlot." The float received first award in the group.

Industry Cooperation

Fire prevention and Keep Maine Green ads in newspapers and magazines throughout the state were sponsored by private industry. The supervisor made special effort to contact officials of industry whenever possible to keep them up-to-date on Keep Green activities. Along with their support given to the American Forest Products Industries, in many sections of the state additional funds were made available to help sponsor local Keep Green activities; for example, to purchase the decals.

Newspaper Cooperation

All of the major daily newspapers cooperated very well by running fire prevention ads throughout the season. They all found the ad mat books as furnished by the U. S. Forest Service and American Forest Products Industries very useful. Many short stories and feature articles were run during the height of the dry period in July and August of 1952 which greatly assisted in alerting the public. The interest in this cooperation was well appreciated and the newspapers should be congratulated on doing such an outstanding job. Additional cooperation was received from monthly, weekly, and bi-weekly newspapers. Whenever possible the supervisor personally contacted the editors or staff writers of the small and large newspapers.

Radio Cooperation

Throughout the fire seasons of both years there was excellent cooperation from radio stations in the state, and the supervisor

made special effort to contact all the station managers and furnished them with fire prevention scripts. Special announcements were made during dry periods to alert the public concerning fire prevention measures. Some of the major stations made over 250 such announcements during the 1952 fire season. They deserve to be complimented on this excellent public service. Many stations also cooperated further by running a 14-week series of the "Jelly Elliott" recording program as released by the U. S. Forest Service. On 4 occasions the supervisor arranged for special radio broadcasts and a larger number were arranged by the forest commissioner.

Theatre Cooperation

The supervisor prepared a mimeographed leaflet which was sent to all theatre managers asking for their cooperation in the Keep Maine Green program by running fire prevention movie shorts during dry periods. Many theatres requested U. S. Forest Service movie shorts and especially good coverage was provided by some of the outdoor theatres. The movie "Red Skies of Montana," produced by Twentieth Century-Fox, was shown in many theatres in Maine during 1952. The supervisor cooperated with the State Theatre in Bridgton and the Strand Theatre in Skowhegan in setting up fire prevention poster exhibits and also distributed prevention literature to persons attending. 10 showings of the movie "Log Jam," as presented by R.K.O. Radio Pictures, Inc. were arranged late in 1952 with over 40 theatres scheduling the movie for early in 1953. The supervisor kept in close touch with the proposed schedule and notified many of the county chairmen so that persons in their area could plan to see it. The movie which was filmed along the Machias River, in Maine, gives the audience an interesting story of our long log industry which will aid in teaching the value of our forest resources.

Bank and Utility Cooperation

During 1952 the supervisor contacted many bank officials throughout the state and several of the larger banks cooperated. The Depositors Trust Company alone distributed 26,000 fire prevention leaflets to their depositors along with the usual monthly statements. Although utility officials were also contacted, it was too late in 1952 to carry out plans. Arrangements are being made with the Central Maine Power Company to send out fire prevention fliers with their monthly statements to their 180,000 customers during 1953.

Cooperating Organizations

As previously mentioned, the State Department of Education and the Department of Inland Fisheries and Game are cooperating closely with the Keep Maine Green program. In addition to these, the State Park Commission every year is distributing a supply of posters and educational leaflets to persons visiting the Parks throughout the state. Several of the Soil Conservation offices assisted by distributing material along with its regular mail and many of its personnel have attended Keep Maine Green meetings. In keeping with the plans of the National Federation of Business and Professional Women's Clubs that all clubs participate in the "Conservation of Our National Resources" programs, the program of Keep Maine Green was selected as one that would be most suitable for Maine clubs during 1952. In cooperation with the supervisor the state chairman of Public Affairs sent out a mimeographed leaflet telling of the importance of Keeping Maine Green and also furnished a list of literature, movies, and other services that are available through the county chairmen and the supervisor.

Summary

The Maine Forest Service is grateful for the increased interest shown in promoting Keep Maine Green throughout the state. The department was especially pleased to receive the outstanding cooperation during the dry fall of 1952 which extended through the hunting season. If the public had not cooperated as they did, without a doubt the forest commissioner would have had to recommend the closing of the woods to hunting, as was done in other New England States.

Now that progress has been made in Keeping Maine Green, it is the hope of the committee that interest will continue and build up in the future so the number of fires caused by human carelessness will be greatly reduced. Yes, it is the duty of everyone in our state to protect our large forest resources. We all will benefit greatly by Keeping Maine Green.

Plans for 1953

To present the message of fire prevention to the public in a different way, plans are being made by the department to purchase a mechanical bear which will be 61½ inches high; can talk and

sing while moving his head from side to side. He will be known as "Smokey," Maine's fire prevention bear, and will be used primarily for exhibits and fairs, although he will spend considerable time at schools bringing his message of Keep Maine Green to the children. A demand for "Smokey" to talk before Granges, clubs, and other organizations is expected. Many are looking forward to the time when "Smokey" will arrive in Maine to help in the supervision of our Keep Maine Green program.

It is expected that many new ideas and plans will result from the annual meeting of county chairmen in March.

MAINE TREE FARM SYSTEM

Joel W. Marsh, Supervisor

Maine first became interested in Tree Farms in 1946 and after 4 successful years under a progressive Keep Maine Green program, it was generally felt that it was time for Maine to inaugurate the Tree Farm System.

History

A Tree Farm is an area of privately-owned land dedicated to continuous growth of forest crops for commercial purposes. The words "Tree Farm" mean the owner has received public recognition for having demonstrated outstanding ability in management of his woodland. Such a Farm was officially dedicated in 1941 to the perpetual production of trees, known as the Clemons Tree Farm, owned by the Weyerhaeuser Timber Company, located at Montesano, Washington. A national Tree Farm movement soon followed, sponsored by the American Forest Products Industries, Washington, D. C. By 1951, after the Tree Farm Systems' 10th anniversary, 3,409 certified Tree Farms were established and located in 33 of the 48 states. By October of 1952 there were a total of 3,918 Tree Farms, totalling 26,652,223 acres of woodland, owned and operated by farmers in the United States who had carried out proper and recognized forest management practices.

Plans for Maine—1951

Early in 1951 there was a meeting of foresters representing the forestry department, industry, and others to formulate plans. An investigative committee was selected and assigned to look into the possibilities of a Tree Farm program for Maine. The members of the committee were as follows:

Edwin Giddings, Chairman, Penobscot Development Co., Great Works
E. G. Kelso, Hollingsworth & Whitney Co., Waterville
John T. Maines, Great Northern Paper Co., Bangor
Richard Waldron, Chadbourne Lumber Co., Bethel
George Sawyer, Dunn Heirs, Ashland
Morris Wing, International Paper Co., Ashland
Norman Gray, Fryeburg
E. C. Melcher, S. D. Warren Co., Cumberland Mills
Henry Shepard, Eastern Pulp Wood Co., Calais
Lewis Bissell, Extension Forester, University of Maine, Orono
George Winter, St. Regis Paper Co., Bucksport

During the year this committee had several meetings and felt that such a program would be a definite help in promoting timber management in Maine. Before definite plans could be made, it was decided that several points should be considered carefully:

1. There should be an executive secretary to supervise the program and arrange for contacts, talks, and publicity.
2. There should be a central office to supervise and arrange for inspection of prospective Tree Farms.
3. The Tree Farm standards should be high enough to separate intentional forestry from accidental forestry. They should consider the difference in forestry conditions between northern and southern Maine. To illustrate—the pine land standards naturally would be quite different than the spruce-fir forest management standards.
4. Assistance of women's organizations, Granges, men's clubs, and other groups should be solicited to promote the Tree Farm program in Maine.

Meeting, February 5, 1952

Over 50 persons representing the forestry department, industry, landowners, and cooperating agencies and organizations met in the Senate Chamber, State House, Augusta. Forest commissioner Nutting greeted everyone and commented on the fact that there was such a large group present interested in the proposed Tree Farm program.

Governor Payne was introduced and opened his talk by greeting those present and expressed his thanks to all committees for their cooperation with him in making advancements in forestry conservation. He also expressed that a Tree Farm program is what is needed in Maine, especially to encourage small owners to practice good forestry. He congratulated those persons working in research toward better utilization of hardwoods and other forest products. Governor Payne went on to say that it was gratifying to see the progress made toward forest conservation; but stated that we must keep building, constructing, looking forward to the future, and keeping conservation in mind at all times. With watershed, wildlife, fish, and all forms of activity dependent upon forestry, we all must do our part to protect this great resource.

Mr. James McClellan, Forester, American Forest Products Industries, Washington, D. C. discussed the Tree Farm system on a national basis and said, "In Maine you have the basis for one of the best programs in the nation. Maine has many forestry-minded people. Therefore, this program should be a great benefit to your state."

Mr. Edwin Giddings, chairman of the Tree Farm Investigative Committee, made a report of the four points previously mentioned. These were carefully discussed. It was pointed out that Joel W. Marsh, Maine Forest Service, would be available to act as executive secretary and to supervise both the Tree Farm and Keep Maine Green programs. The supervisor would be located in the forestry department office in Augusta. It was generally felt that industry could make available foresters to assist in the inspection of prospective Tree Farms. Further assistance would be available from the Extension Service, Forestry Department at the University of Maine, Northeastern Forest Experiment Station, Soil Conservation Service, State Grange, women's and men's clubs, and from leading newspapers in Maine.

All those present were in favor of having a Tree Farm program in Maine. The present Investigative Committee was given the duty of starting the ground work and was selected to take on the duties of the executive committee. They were designated to select a state-wide committee for the over-all supervision and also to set up standards and inspection details in cooperation with representatives of American Forest Products Industries. In Maine, the Tree Farm system will be co-sponsored by Maine forest products industries and the Maine Forest Service.

Meeting, March 10, 1952

A Tree Farm meeting was held in Bangor with 100% attendance of the executive committee. L. C. Rawson, Northeastern representative of American Forest Products Industries, agreed that his organization would cooperate with the committee by assisting in the organizing and publicizing of the program in Maine and by making available leaflets, certificates, and inspection forms to be furnished to the supervisor. Mr. Rawson was available to personally assist the supervisor as additional advice was needed.

It was generally agreed that activities should be functioning as soon as possible so that plans could be made for the first Tree Farm dedications early in the fall of 1952. Various sub-committees were formed to take care of a proposed general Tree Farm publication, specific Tree Farm standards, designing of a suitable Tree Farm sign, obtaining a list of available inspectors, financing the signs and any other expense, and to take care of certifications.

General Publication Committee

The supervisor cooperated with Mr. E. G. Kelso, chairman of the General Publication Committee and immediate progress was made in designing and presenting to the American Forest Products Industries material for a general Tree Farm leaflet. The leaflet included 8 photographs illustrating different phases of forest management and covered written material on Tree Farm definition, certification, qualifications, and why it pays to be a tree farmer. The leaflet copy was approved by members of the Tree Farm committee and forwarded to Washington for printing. Early in the fall, the 10,000 copies of this leaflet were received and arrangements made for their distribution. Additional copies were available from the forestry department and from members of the Tree Farm committee.

Specific Standard Committee

This committee, under the chairmanship of Edwin Giddings, with the assistance of the supervisor, carefully studied possible standards for the Maine Tree Farm system. Several meetings were called during the spring and summer and officials of industry were called in for needed advice. By early fall a Manual of Standards and Procedures was assembled which included general Tree Farm information, administration procedures, general Tree Farm standards, specific Tree Farm standards, procedure of certification, presentation of awards, maintenance with notes and samples of inspection records. This manual was printed and distributed to all members of the Tree Farm committee and to foresters and others interested in cooperating. Additional copies were made to furnish new inspecting foresters as they cooperated.

Tree Farm Sign Committee

The General Publication Committee was assigned to take over the duties of the sign committee. Sample sketches of suggested signs were mimeographed by the supervisor and sent out to all persons interested in the program for their consideration. As a result, an ideal sign was selected and immediate arrangements were made with the Smith Sign Shop, in Bridgton, to start making signs so as to be ready when the program got under way in the fall. These 3′ x 3′ signs, with the name of the owner, are being placed along the road adjacent to approved woodlands to il-

lustrate to the public that the owner is practicing good forest management. In many cases it will also indicate that neighbors and interested persons are invited to make an inspection with the owner so they will have a better understanding of the values of woodland management.

Inspections Committee

It was left with the supervisor to obtain a list of potential inspecting foresters who would be available to handle this phase of the work. Forest Commissioner Nutting wrote letters to industry, the Soil Conservation Service, and the University of Maine for their assistance. From this request the supervisor now has a list of cooperators from most sections of the state.

Finance Committee

Mr. Edmund Melcher, chairman of this committee, contacted representatives of industry throughout the state and immediately raised enough money to take care of the purchase of 35 Tree Farm signs and also to take care of proposed additional costs. Some of the money was used to finance the meals for those present at the first 3 initial dedications as scheduled in October.

Certification Committee

It was decided that the 6 members of the Specific Standard Committee along with Edwin Giddings, chairman, would serve as the executive committee of the Certification Committee. This committee may, if they desire, call on other eligible members to pass on certification.

Applications Received

From July to December 1952, 41 Tree Farm applications were received by the supervisor. Arrangements were made to have these woodlands inspected with the thought of having at least one forester each from the Maine Forest Service and industry. On the inspection of large acreages and on the initial inspections most of the members of the executive Tree Farm committee were present so as to become fully acquainted with the procedures. At the close of 1952, 23 inspections were completed with the inspection records and recommendations from the inspecting foresters forwarded to the supervisor for consideration. Inspection records of 4 of the outstanding woodlands were selected and

immediately forwarded to the certification committee. Upon approval they were returned to the supervisor who made arrangements for the initial dedications.

Initial Dedications

The supervisor and certification committee were careful in selecting the first 4 tree farmers to illustrate to the public the types and sizes of acceptable, properly managed woodlands. At the request of industry the supervisor and executive committee spent considerable time making suitable arrangements for the initial dedications of these areas. Plans were made to invite a large number of persons who were interested in tree farming and mimeographed notices were mailed from the supervisor's office. The woodlands inspected were carefully marked with trails and signs to make the field trips more instructive to those present. Mimeographed outlines were furnished which described the accomplishments of the tree farmers. Arrangements were made for a supper at each dedication which was provided by industry through the Finance Committee.

The first dedication was scheduled on October 20, 1952, in South Penobscot, with 65 people present. As Maine's first tree farmer, Samuel B. Condon was presented with a Tree Farm certificate and Tree Farm sign as a merit award for practicing forest management since 1904, on his 3,000 acres of woodlands. At the same time, R. I. Ashman, Head of the Forestry Department at the University of Maine, received a similar award as Maine's second tree farmer for demonstrating methods of bringing culled-over farm woodlands and abandoned fields into maximum production of high quality forest products. Mr. Ashman's woodlands, consisting of 105 acres, are located in Chelsea. Following the supper an inspection was made of Mr. Condon's woodlands.

The second dedication was scheduled on October 22, in Windsor, with 55 people present. Raymond York and his son Carroll were presented with a certificate and sign for recognized forest management practices on their 41-acre woodlot since 1945. After the erection of the Tree Farm sign an inspection was made of the woodlot. This area is typical of the size of many farm woodlots located throughout the organized towns of the state.

On October 24 the third dedication was held in Parsonsfield, when the Trustees of Leavitt Plantation were given Tree Farm

awards for managing 6,000 acres of forest land since 1932. During the past 35 years, over 2,000,000 trees have been planted to reforest abandoned fields. 75 interested people were present who enjoyed the field inspection which was followed by a supper.

All of the dedications were well publicized in the newspapers and many feature articles on Tree Farms were used in such magazines as the Forestry Digest, Northeastern Logger, and other forestry publications. Radio representatives were also present and on 2 occasions made wire recordings which were later transcribed.

Plans for 1953

The supervisor and executive committee will continue to make special effort to complete the inspection of woodlands as the Tree Farm applications are received. Although the future dedications will not be as elaborate as the initial dedications, they will be well publicized so that the general public will be informed as to the progress of this program. For those woodland owners who do not quite meet the Tree Farm standards and requirements, special effort will be made to maintain their interest by having service foresters cooperate with them so that certification can be made possible in the near future.

As the program enlarges, the supervisor plans to send out to the general public mimeographed progress reports. It will be the policy of the committee to carefully weigh each application and inspection so that all approved Tree Farms will be good examples of better forest management and will be the basis and inducement for others to join the Maine Tree Farm system.

SCHOOL (Public) LOTS

Demand for stumpage on the school lots was very active during the biennium.

The same policy of managing these lots was continued. The basic policy has been to place over-all management under forest fire supervisors; with Glen Tingley, assistant supervisor in the central division, Ralph Bagley in the eastern division, and the dispatcher-draftsman in the Augusta office handling boundary lines and major field supervision. Advertising of stumpage, issuing of permits, and stumpage payments are handled by the Augusta office, together with camp, flowage, and other leases.

The management of school lots in organized plantations is handled jointly as the law requires approval of the stumpage price by local assessors.

School lots should be examples of good forest practice. The school lot in Macwahoc has been cut on a marked tree basis, with much of the marking being provided free of charge by the Northeastern Forest Experiment Station. This is the first school lot where the cutting has been controlled in this way. It is hoped that eventually the cutting on all school lots can be put on a marked basis. How to handle joint responsibility and widely scattered areas are the large problems to be solved before the program becomes 100% effective.

No lots were set off during the biennium.

Following is a summary of school lot status:

Acres	Classification
160,438	Unlocated—timber and grass sold
160,236	Located—timber and grass sold
750	Unlocated—plantation-owned
46,627	Located—plantation-owned
2,667	Unlocated—state-owned
19,775	Located—state-owned

The following income was received from Public Lots during the past biennium:

INCOME FROM PUBLIC LOTS

Calendar Years 1951 - 1952

	Stumpage	Leases
Aroostook County		
T. 3, R. 2 (Forkstown) WELS	....	$20.00
T. 10, R. 4, WELS	....	15.00
T. A, R. 5 (Molunkus) WELS	....	152.50
T. 17, R. 5, WELS	....	940.34
T. 14, R. 6, WELS	164.64	....
T. 16, R. 10, WELS	12,413.82	....
T. 16, R. 11, WELS	22,659.27	....
T. 17, R. 10, WELS	50.37	....
T. 17, R. 11, WELS	1,948.68	....
T. 18, R. 13, WELS	....	20.00
Caswell Pl.	4,639.00	....
Glenwood Pl.	....	50.50
Hamlin Pl.	613.30	....
Hammond Pl.	53.36	....
New Canada Pl.	414.19	....
Reed Pl.	....	30.00
Winterville Pl.	10,082.15	180.00
Franklin County		
T. Letter E	....	240.00
T. 3, R. 3, WBKP	....	1,300.00
T. 3, R. 4, WBKP	....	600.00
Sandy River Pl.	798.89	....
Hancock County		
T. No. 4, ND	....	22.50
No. 33 Pl.	....	10.00
Oxford County		
T. 4, R. 2, WBKP	....	460.00
T. 4, R. 3, WBKP	....	10.00
T. 4, R. 4, WBKP	....	10.00
T. 5, R. 4, WBKP	....	54.00
Lincoln Pl.	993.72	....
Magalloway Pl.	140.62	....
Penobscot County		
T. 5, R. 8, WELS	....	20.00
Grand Falls Pl.	535.13	....
Stacyville Pl.	1,496.18	....
Webster Pl.	1,453.60	....
Piscataquis County		
T. 8, R. 10, WELS	....	2.50
T. 2, R. 11, WELS	....	55.00
T. 7, R. 12, WELS	....	30.00
T. 1, R. 13, WELS	92.85	....
Elliottsville Pl.	....	50.00
Somerset County		
T. 6, R. 1, NBKP	....	10.00
T. 4, R. 3, NBKP	24.84	....
T. 3, R. 4, BKP, WKR	....	50,000.00
Bigelow Pl.	16.06	....
Caratunk Pl.	8,662.61	....
Dennistown Pl.	....	150.00
Jackman Pl.	12.87	....
Moose River Pl.	684.60	....
Pleasant Ridge Pl.	148.34	....
The Forks Pl.	4,033.61	....
West Forks Pl.	6,137.31	....
Washington County		
T. 18, MD	22.22	....
Codyville Pl.	1,057.29	220.00
Lambert Lake Pl.	3,500.00	....
Pl. #21	835.64	....
	$83,655.16	$54,652.34

LAND OFFICE

The demand for old land records is constant. On file in the Land Office are 36 books of maps, 104 books of field notes, and 39 volumes of deeds, to which reference is made when information is desired. As these records are invaluable, they were microfilmed in 1951.

Many inquiries are received concerning the ownership of islands. While it is fairly easy to trace ownership of coastal islands, the records on many inland islands are lacking. In some cases quit-claim deeds have been given by squatters and title handed down through the years without the state having given any title.

A record of all state-owned real estate is kept in the Land Office.

The following areas are portions of the original public domain which were not sold when Massachusetts and Maine disposed of the public lands:

Lot 102—St. Agatha
Lots 45 and 48—Ashland
Lots 31 and 45—New Sweden

Tax delinquent lands under the administration of the forest commissioner follow:

9 R 5, WELS, Aroostook County	382 Acres
T. 6 ND, Washington County (Hardwood Island)	50 Acres
T. 18 M.D., Washington County	3,277 Acres

ALLIED PROGRAMS

The forest commissioner serves as a member of a number of state, regional, and national agencies and associations that affect forestry department work:

Member—State Park Commission
Baxter State Park Authority (Chairman 1951 and 1952)
Association of State Foresters (Secretary-Treasurer 1952)
Maine Development Commission
Northeastern Forest Fire Protection Commission (Chairman 1951 and 1952)
Maine Mining Commission
State group New England-New York Inter-Agency Study

He also attends technical meetings of the Inland Fisheries and Game Conservation committee as forestry representative.

STATE FOREST NURSERY

Henry Plummer, Supervisor

The State Forestry Nursery, located at Orono and Stillwater, has been steadily enlarging its plant and facilities as well as increasing the productive capacity of the land area allotted to it during the past two years.

The demand for planting stock has increased as landowners have taken a greater active interest in the forestry future of the state.

Forest tree seedlings were first grown at the University of Maine in 1903-1904 by the first class of forestry students to be enrolled at the school. According to the biennial report of the State Forest Commissioner for that year, "work was begun on a forest nursery on the college grounds." Records also reveal that a school forest-tree nursery program had been conducted during the next decade as a part of the curriculum for the forestry students at the University of Maine. Thus it served as a laboratory for practical experience in forest-tree seedling production for those students of forestry as it still does for the students of today.

Ten years after the first school nursery was started, a bill was passed by the Maine legislature providing the sum of $1,000 annually for a period of two years (1913-1914) to establish a State Forest Nursery for the purpose "to raise seedlings and sell the same to the residents of the State of Maine at actual cost."

Report of inventory of stock on hand for 1913-1914, according to the records, was over 200,000 seedling-trees at the nursery. These would require another year or two to reach transplant size before shipment to the field planting areas in the state.

Species of the 1913-1914 production were also listed. Eastern white pine was predominant and with Norway (red) pine made up nearly 75% of the total. Norway spruce was the only spruce and made up another 20% of the total. The remaining 5% consisted of miscellaneous species such as Austrian and Scotch pine, larch, and a few hardwoods.

Forty years later the forest nursery at Orono has a record of continuous production under the direction of the State Forest

Commissioner's office. The original nursery site established on the campus is still being used.

Number and species of seedling stock on hand under the present expansion program that has been in effect since 1947-1948, give the figure of about 2,000,000 trees as an estimated inventory for 1953-1954. Eastern white pine, Norway pine, white spruce, and Norway spruce with other miscellaneous species are in a ratio approximating 8 : 4 : 4 : 1 respectively. In other species, interest and demand is building up for Christmas tree stock, mostly of the "fir group." The hybrid larch and hardwoods such as oak, ash, and sugar maple, along with Scotch pine, have also been requested by landowners of the state in limited amounts.

Labor and Supervision

Through the years both forestry and other students at the University have been the main source for needed labor during the school sessions. For summer maintenance, labor has been employed from the nearby communities of Orono, Old Town, and Stillwater.

The cost of labor and supervision is the largest item of expense in the yearly operational budget. During the spring and fall seasons, when the lifting and shipping of field planting stock is at its height and the transplanting of seedlings to transplant beds must be done, the necessary labor force is enlisted almost entirely from the student body. Thus is provided an opportunity for qualified and deserving students to obtain paid employment and at the same time insuring completion of important and necessary work at the nursery. Student labor has always carried the brunt of the heavy spring work load. A standard pay scale has been in effect since 1951-1952 on all student labor employed.

Roger F. Taylor, Superintendent of the State Forest Nursery, is employed most of the time from April until September keeping the work schedule up to date. He draws his key men from the advanced students of the forestry school. These serve as subforemen for the different seasonal operations. Continued employment of student and local help will be necessary as the total production increases toward the million tree mark annually.

Land Use—Main Nursery

The original nursery site on the University campus is still being used. All possible land surface has been taken over for seed-

ling production wherever feasible to do so. On a rotation basis, with a 3-year cycle, it is believed that sufficient land area is available to supply seedlings enough for a million transplants each year, if necessary.

Annex

The area at the nursery annex at Stillwater (two miles from the main nursery), which was established in 1950, has been doubled this year to make a total area there of about 2.0 acres. All available land at the annex will be utilized for transplant beds and should permit the lining-out of nearly one-half (½) million tree seedlings this season, which is the planned inventory for reforesting purposes in 1954 and 1955.

Total land area under the forest nursery management program is about 4.0 acres at present, including both the annex and main nursery sites.

Should the requirements reach or exceed the present inventory of saleable stock (350,000) on a yearly basis, additional land area must be obtained to allow for the expansion of transplant-bed space at the annex.

Structures, Buildings, and Equipment—Annex

At the annex a storage shed and equipment room of a temporary semi-permanent type has been erected for use during the work sessions. This provides shelter for the workers in adverse weather and cover for supplies and equipment being used.

The water supply at the annex consists of an above-the-ground pipe line connected directly to the city water main of the City of Old Town. The summer of 1952 was a very dry one, but the acre, then under cultivation, was well provided with water from this source.

Main Nursery

The enlarged cellar space in the remodeled administration building at the main nursery site has been very useful. This basement has proper toilet facilities for use of the working force at the nursery; a much needed addition to the plant. A small room for storage of seed also has been constructed in the basement.

The supplemental irrigation system, which includes some 1,000 feet of 3-inch aluminum pipe with risers and sprinklers that have been purchased, has provided a water supply sufficient to cover the entire area of seedbeds at the main nursery. Pumping water from the Stillwater River that bounds the nursery on the west, a continuous but controlled supply was provided throughout the rainless summer months of 1952. It was this irrigation system that saved the 1954 and 1955 tree crop of current tree seedlings.

In addition to the irrigation equipment the tractor unit with plows and harrows has proven its value in preparation of the land areas, as well as on other jobs such as mowing hay and the hauling of equipment and supplies when necessary.

A pick-up truck assigned to the nursery from the State Forestry Department has facilitated greatly in the lighter hauling jobs such as moving fence posts, equipment, hand tools, and hauling sawdust, sand, and mulch (leaves and needles) as well as both organic and inorganic fertilizers.

A mechanical shredder added to the inventory this past year has been of value in the mixing and shredding of leaves and other materials into compost which is used on the seedbeds and to aid in building up the fertility of the soil.

Additional mechanical equipment will be needed as the yearly production of transplant stock increases.

Cooperation with Other Agencies

In cooperation with the (Forest) Soils Department and the Agricultural Experiment Station at the University, research and study has given some valuable suggestions and pointed out some interesting facts concerning the needs of the nursery soils.

Dr. Roland A. Struchtemeyer has also given valuable suggestions concerning the use of liquid-nitrogen supplements. Our experience has demonstrated that delayed application beyond the month of June encourages continued top growth well into the fall months. Such late growth in our area does not permit proper "hardening-off" and thus survival without damage through an average winter is not always favorable.

Sawdust is in continued use as a mulch and weed deterrent throughout the growing seasons. It also aids in the improvement of the texture of the heavy soils which are found here at the nursery sites.

Stock Distribution and Production

Since the last biennial report of 1950-1951, the records for distribution of planting stock in the state, through the State Forest Nursery, show that over three-fourths of a million coniferous trees were sent to landowners in the state. In the fall of 1950 and the spring of 1951, 141,000 were distributed, while in 1951-1952 over 611,000 trees were handled.

The species being favored at present are white pine, Norway (red) pine, white spruce, and Norway spruce. These have proven most satisfactory for the soil and climatic conditions throughout the state as a whole and seem to have a steady demand each year.

There has been an increasing interest in the planting of Christmas tree stock by some of the people of the state. To supply this demand, a small start has been made in producing species best suited for the markets as well as for the growing conditions in this state. The general policy on this has been to go slowly on volume production until the program has been more carefully analyzed as to the real needs and relative success of such plantings.

From the distribution report for 1952 of the Regional Soil Conservation Service (federal) Nursery at Big Flats, New York, Maine farmers were credited with a total of 482,000 trees sent to them through that agency. The species were listed as white pine, Norway spruce, Scotch pine, larch (European and Japanese), black locust, and Douglas fir.

Thus a combined total from records of the Soil Conservation Service and the (Maine) State Forest Nursery shows over a million trees provided Maine landowners in 1952. Of the total distribution from the State Forest Nursery for this period about 85% was obtained from other state nurseries that had a surplus of the species requested.

Three to four years are required to develop young trees in the nursery before shipment to landowners, and as a full scale increase in production was undertaken two years ago, the 1953-1954 annual output should total between 400,000 and 500,000 trees from our own nursery.

Sale of trees produced from the Maine State Forest Nursery for 1951-1952 fiscal year	48,000 trees
Estimated probable sales originating from State Forest Nursery for 1952-1953 fiscal year	350,000 trees

Inventory of stock for sale in 1953-1954 on hand 450,000 trees
Budget for fiscal year 1951-1952 was $12,000.
Estimated budget for fiscal year 1952-1953 is $15,000.

Cooperating Agencies in Forest Tree Planting Program in the State

Request-order cards for trees from the State Forest Nursery may be obtained from State Service (Farm) Foresters, County Extension Agents, Soil Conservation Service Field Offices, State Forestry Extension Specialist, Supervisor of State Forest Nursery, Orono, Maine, and the Forestry Department of the University of Maine. The State Service (Farm) Foresters are available to aid landowners with their forest tree planting problems in their own districts.

Current tree prices are listed as $10.00 per thousand, f.o.b., Orono, Maine, for all species.

TIMBER PRODUCTION

Timber cut reports have proved to be valuable and desired by many people. They are accurate and complete reports of timber drain, by harvest.

Most primary wood users reported their cut promptly. Unfortunately, there were several who had to be contacted personally by our personnel. This delayed the summary as well as causing extra cost in warden and service forester travel.

The reports do show trends in cut. For example, in 1952 the pine cut in York County shows a decline over previous years, probably as a result of 1947 fires and heavy cutting in recent years. This is significant as other nearby counties show an increase in cut. When a forest survey is completed in Maine, these figures will be of even more value.

HARDWOOD LUMBER PRODUCTION IN MAINE—1951
In Board Feet
(402 Mills Reporting)

County	Birch	Maple	Beech	Oak	Ash	Basswood	Poplar	Elm	Mixed Hardwoods	Total Hardwoods
Androscoggin	740,515	212,480	114,340	302,031	1,600	77,600	18,935	—	—	1,467,501
Aroostook	1,392,010	1,857,969	233,172	5	198,736	147,227	325,509	10,582	1,405,301	5,570,511
Cumberland	441,155	51,800	174,190	1,292,251	15,006	5,300	—	350	332,058	2,312,110
Franklin	11,565,602	3,968,643	1,358,713	68,790	45,214	157,587	442,693	5,000	—	17,612,242
Hancock	638,698	5,710	5,091	66,000	—	—	—	—	—	715,499
Kennebec	905,350	199,323	170,587	453,777	74,700	106,100	126,235	2,731	—	2,038,803
Knox	187,285	120	11,340	96,048	950	—	—	7,000	—	302,743
Lincoln	241,174	35,039	26,965	385,884	13,500	8,000	5,281	1,000	—	716,843
Oxford	13,560,687	3,626,905	4,946,009	1,047,772	119,272	42,980	306,319	6,500	343,781	24,000,225
Penobscot	1,677,442	3,221,922	376,414	249,128	615,866	319,959	13,321	11,693	5,453,785	11,939,530
Piscataquis	2,681,633	2,034,088	49,665	35,000	441,583	53,764	263,506	—	18,257	5,577,496
Sagadahoc	43,230	1,950	1,835	34,424	120	—	200	800	—	82,559
Somerset	6,876,104	2,000,677	526,777	63,674	631,057	202,659	214,417	15,536	—	10,530,901
Waldo	694,489	250,742	89,261	276,253	19,500	23,500	84,301	—	300,000	1,738,046
Washington	396,394	172,143	106,143	112,282	173,000	2,000	2,000	5,000	—	968,962
York	298,346	450,111	572,081	1,243,539	21,000	5,225	—	—	912,855	3,503,157
Totals	42,340,114	18,089,622	8,762,583	5,726,858	2,371,104	1,151,901	1,802,717	66,192	8,766,037	89,077,128
Per cent of total	47.5%	20.3%	9.9%	6.4%	2.7%	1.3%	2%	.07%	9.9%	100%

SOFTWOOD LUMBER PRODUCTION IN MAINE—1951
In Board Feet
(667 Mills Reporting)

County	White Pine	Hemlock	Spruce	Fir	Pitch Pine	Norway Pine	Cedar	Tamarack	Mixed Softwoods	Total Softwoods
Androscoggin	32,822,791	4,028,307	1,243,307	91,516	954,690	182,500	—	436	—	39,323,547
Aroostook	4,991,909	456,670	23,917,125	5,541,620	5,000	98,000	2,916,596	10,000	435,092	38,372,012
Cumberland	36,569,805	9,835,987	1,270,518	34,000	692,170	2,252,504	12,000	1,000	2,062,427	52,730,411
Franklin	7,075,971	2,742,250	376,065	65,000	10,000	35,000	20,500	7,500	—	10,332,286
Hancock	6,397,721	152,437	4,228,191	94,000	1,675,500	515,458	90,190	7,000	—	13,160,497
Kennebec	20,336,501	9,127,428	2,261,489	146,000	1,447,162	252,399	71,276	12,000	—	33,654,255
Knox	3,071,980	1,055,185	1,909,785	175,100	230,000	45,150	600	—	60,000	6,547,800
Lincoln	10,247,465	2,380,334	2,026,866	76,000	1,840,068	109,190	—	—	—	16,679,923
Oxford	63,545,401	16,710,766	2,721,966	197,359	47,839	196,507	—	4,000	169,580	83,593,418
Penobscot	24,867,255	3,220,159	4,529,151	200,265	80,000	558,230	690,985	1,787	20,000	34,167,832
Piscataquis	11,268,612	639,674	3,511,218	181,720	—	629,138	69,111	4,000	75,000	16,378,473
Sagadahoc	3,660,224	1,128,871	390,313	6,000	376	18,650	75	86	—	5,204,595
Somerset	18,268,225	3,105,220	733,849	745,446	105,071	60,000	1,795,757	14,048	—	24,827,616
Waldo	7,022,587	2,640,441	1,916,655	217,049	200,000	329,503	123,800	—	588,573	13,038,608
Washington	11,578,953	858,982	2,170,757	16,200	200,000	1,397,852	565,500	2,000	—	16,790,244
York	74,929,878	10,092,097	1,262,505	121,000	2,087,702	2,055,960	4,000	—	650,492	91,203,634
Totals	336,655,278	68,174,808	54,469,760	7,908,275	9,575,578	8,736,041	6,360,390	63,857	4,061,164	496,005,151
Per cent of Total.	67.9%	13.8%	11%	1.6%	1.9%	1.7%	1.3%	.013%	.8%	100%

PULPWOOD PRODUCTION IN MAINE—1951
(In cords)

County	Spruce and Fir		Hemlock		Pine		Hardwoods		Poplar		Totals	
	Peeled	Rough	Peeled	Rough	Peeled	Rough	Peeled	Rough	Peeled	Rough	Peeled	Rough
Androscoggin.	921	4,716	780	2,053	1,325	32,274	485	9,019	81	16	3,592	48,078
Aroostook....	57,375	295,861	4,350	1,682	1,012	121	2,255	3,394	25,364	66	90,356	301,124
Cumberland..	756	5,622	53	426	—	25	8	27,562	—	—	817	33,635
Franklin.....	6,501	66,971	1,846	3,763	870	4,337	1,562	35,338	837	500	11,616	110,909
Hancock.....	13,002	32,268	3,231	1,712	400	798	895	10,424	1,103	85	18,631	45,287
Kennebec....	1,041	5,222	1,201	4,321	3,335	15,557	586	27,245	1,720	92	7,883	52,437
Knox.....	631	6,120	790	1,513	—	—	54	358	417	69	1,892	8,060
Lincoln.....	1,534	13,847	1,025	1,684	—	—	—	1,410	576	90	3,135	17,031
Oxford.....	5,521	56,626	2,812	7,964	1,500	10,896	3,727	83,187	116	288	13,676	158,961
Penobscot....	22,542	75,017	23,476	18,251	2,705	7,600	18,061	53,694	7,798	1,466	74,582	156,028
Piscataquis...	21,281	102,640	5,186	6,727	795	3,210	5,098	18,202	6,565	1,041	38,925	131,820
Sagadahoc....	728	5,494	176	409	932	—	15	2,241	81	16	1,932	8,160
Somerset.....	23,894	298,447	1,988	2,545	275	—	1,741	29,144	5,498	1,141	33,396	331,277
Waldo.....	3,832	14,645	2,157	3,242	1,661	1,388	1,041	11,177	1,212	1,012	9,903	31,464
Washington...	33,815	51,074	9,580	5,441	2,989	404	3,830	10,052	5,854	20	56,068	66,991
York.....	228	733	—	202	—	1,821	—	28,073	—	—	228	30,829
	193,602	1,035,303	58,651	61,935	17,799	78,431	39,358	350,520	57,222	5,902	366,632	1,532,091
Conversion of "Peeled" to "Rough".....	227,767		69,001		20,940		46,303		67,320		431,331	
Total Rough..	1,263,070		130,936		99,371		396,823		73,222		1,963,422	

HARDWOOD LUMBER PRODUCTION IN MAINE—1952
In Board Feet
(402 Mills Reporting)

County	Birch	Maple	Beech	Oak	Ash	Poplar	Elm	Basswood	Mixed Hardwoods	Total Hardwoods
Androscoggin	599,742	534,527	550,255	2,218,704	6,200	10,000	2,087	86,428	—	4,007,943
Aroostook	1,726,177	1,423,786	210,550	—	145,850	16,600	25,602	107,875	1,519,183	5,175,623
Cumberland	473,560	34,539	190,695	1,589,149	14,938	10,960	700	—	48,443	2,362,984
Franklin	17,976,517	3,281,416	1,744,013	12,000	72,551	217,944	1,000	268,623	—	23,574,064
Hancock	719,924	75,599	12,572	50,500	1,500	—	—	—	1,000	861,095
Kennebec	1,488,023	347,512	150,638	271,748	54,139	17,177	1,600	85,000	—	2,415,837
Knox	319,750	33,423	3,527	201,824	7,524	919	1,000	3,000	—	570,967
Lincoln	269,360	25,774	35,419	610,474	5,000	21,081	2,800	15,500	—	985,408
Oxford	12,497,598	4,133,215	3,043,242	903,805	151,477	602,599	—	378,224	203,545	21,913,705
Penobscot	2,225,062	4,989,093	286,402	118,728	874,204	30,698	126,467	250,957	285,550	9,187,161
Piscataquis	4,606,212	2,562,144	327,880	22,614	181,801	708,785	3,000	101,506	115,473	8,629,415
Sagadahoc	43,006	1,490	571	143,736	1,850	100	75	—	636	191,464
Somerset	7,163,746	2,374,523	587,132	82,389	959,729	760,488	20,720	232,353	237,907	12,418,987
Waldo	2,789,313	399,867	220,602	355,500	27,000	85,628	3,000	47,153	622,821	4,550,884
Washington	1,150,170	1,002,082	145,940	30,000	183,000	—	—	—	—	2,511,192
York	239,644	152,403	212,030	1,191,552	37,830	200	670	5,315	682,809	2,522,453
Totals	54,287,804	21,371,393	7,721,468	7,802,723	2,724,593	2,483,179	188,721	1,581,934	3,717,367	101,879,182
Per cent of Total	53.2%	20.9%	7.6%	7.7%	2.7%	2.4%	.2%	1.6%	3.7%	

SOFTWOOD LUMBER PRODUCTION IN MAINE—1952
In Board Feet
(653 Mills Reporting)

County	White Pine	Hemlock	Spruce	Fir	Norway Pine	Cedar	Pitch Pine	Tamarack	Mixed Softwood	Total Softwoods
Androscoggin	17,587,301	4,560,765	421,375	186,538	308,966	—	835,000	—	220,000	24,119,945
Aroostook	3,254,231	276,342	21,300,567	7,470,282	19,975	2,880,774	27,000	41,455	217,686	35,488,312
Cumberland	27,472,368	7,141,198	686,913	88,902	263,500	50,000	908,200	10,500	2,447,481	39,069,062
Franklin	4,024,928	2,672,977	160,600	85,500	17,500	14,500	1,000,000	12,000	—	7,988,005
Hancock	10,108,843	537,352	3,577,516	104,794	1,389,205	92,465	659,000	6,500	76,172	16,551,847
Kennebec	18,428,548	8,572,776	510,883	236,654	402,650	244,100	733,000	13,000	—	29,141,611
Knox	3,133,785	1,338,432	1,225,251	55,804	101,000	26,216	304,785	2,000	14,975	6,202,248
Lincoln	16,954,847	3,512,674	2,118,112	315,424	84,000	14,000	335,000	25,500	2,800	23,362,357
Oxford	55,614,493	16,641,654	3,083,876	521,911	7,505,611	14,666	75,000	1,000	—	83,458,211
Penobscot	24,289,854	2,921,037	3,938,254	401,536	360,710	1,200,040	212,000	2,000	98,000	33,423,431
Piscataquis	11,773,833	834,545	1,714,521	240,000	1,104,130	15,075	472,414	5,427	—	16,159,945
Sagadahoc	4,461,015	698,617	489,776	69,781	17,484	5,160	50,517	29	—	5,792,379
Somerset	11,626,950	3,726,735	2,151,748	783,185	291,500	404,216	59,000	16,800	122,731	19,182,865
Waldo	7,969,313	3,210,185	2,671,418	593,858	315,568	187,581	1,334,107	—	—	16,282,030
Washington	57,363,815	690,853	2,827,475	60,000	3,331,099	308,700	—	—	10,436	64,592,378
York	66,483,737	10,988,396	1,322,069	195,010	493,024	1,000	648,538	16,330	3,642,996	83,791,100
Totals	340,547,861	68,324,538	48,200,354	11,409,179	16,005,922	5,458,493	7,653,561	152,541	6,853,277	504,605,726
Per cent of total	67.4%	13.6%	9.5%	2.3%	3.2%	1.1%	1.5%	.03%	1.4%	

PULPWOOD PRODUCTION IN MAINE—1952
(In cords)

County	Hardwood		Poplar		Spruce & Fir		Hemlock		Pine		Tamarack		Totals	
	Rough	Peeled	Rough	Peeled	Rough	Peeled	Rough	Peeled	Rough	Peeled	Rough	Peeled	Rough	Peeled
Androscoggin	9,884	1,225	30	145	7,774	844	1,778	962	9,127	1,338	—	—	28,593	4,514
Aroostook	1,919	2,062	24	28,751	306,550	49,326	2,528	2,592	108	393	776	176	311,905	83,300
Cumberland	23,117	65	—	—	4,159	190	48	60	20,394	498	3	—	47,721	813
Franklin	7,553	5,199	85	328	77,553	4,876	561	2,053	1,548	818	70	—	87,370	13,274
Hancock	6,509	1,398	4	387	55,035	11,930	3,096	9,167	2,778	1,143	1,480	146	68,902	24,171
Kennebec	5,862	1,033	280	1,045	10,944	1,226	1,900	1,188	6,327	6,760	44	—	25,357	11,252
Knox	186	81	72	476	9,640	388	901	698	1,709	384	—	—	12,508	2,027
Lincoln	1,779	—	70	585	9,207	773	736	800	14,180	648	—	—	25,972	2,806
Oxford	72,051	5,671	146	66	43,738	3,610	4,298	3,055	7,493	1,235	331	—	128,057	13,637
Penobscot	44,955	13,588	991	12,755	103,428	24,626	19,851	33,169	6,747	2,731	5,437	464	181,409	87,333
Piscataquis	7,491	5,420	960	4,858	90,996	12,992	4,842	4,122	1,465	375	488	42	106,242	27,809
Sagadahoc	2,767	90	30	125	5,057	369	285	254	3,846	213	—	—	11,985	1,051
Somerset	25,964	3,722	479	8,404	287,866	33,680	3,346	3,550	381	100	87	—	318,123	49,456
Waldo	10,236	1,516	287	1,111	17,982	2,155	3,004	1,286	745	254	20	—	32,274	6,322
Washington	1,790	7,871	7	4,248	76,265	30,862	12,244	5,173	2,508	3,515	538	177	93,352	51,846
York	14,645	—	—	—	470	—	485	—	15,238	129	88	—	30,926	129
	236,708	48,941	3,465	63,284	1,106,664	177,847	59,903	68,129	94,594	20,534	9,362	1,005	1,510,696	379,740
Conversion of "Peeled" to "Rough"	57,577		74,452		209,232		80,152		24,158		1,182		446,753	
Total Rough	294,285		77,917		1,315,896		140,055		118,752		10,544		1,957,449	

EXTENSION FORESTRY

The Extension forestry program is a part of the University of Maine Agricultural Extension Service. This program is planned to teach the farmer and small woodlot owner good forest management including tree planting, improvement cutting, and careful harvesting and marketing of tree crops. County agricultural agents in each county include woodlot management in their programs of agricultural education. Lewis P. Bissell has been state forestry specialist since November 1949.

Newspapers and radio are used as a means of getting wide distribution of information. A bi-monthly publication entitled "Forestry Facts" is sent to more than 3,500 woodland owners and industry representatives. Information on markets for forest products and forest management and news items are included in this mimeographed newsletter. A column of timely forestry information is prepared monthly for the "Maine Farmer and Homemaker," published for the Maine Extension Association.

Field meetings and tours are held to demonstrate good forestry practices in the woods. Movies and slides are used as teaching aids at indoor meetings. Sets of slides have been prepared on forest management, maple syrup production, Christmas trees, and home grounds landscaping.

Information and guidance are given to town officials in developing and managing forest lands owned by the towns as community forests. Assistance is also given by the foresty specialist and county agents in planning and caring for landscaping around homes and public buildings.

Four forestry projects for 4-H Club members have been prepared. There are several 4-H forestry clubs in Maine, and many other members who carry these projects as individuals. As in the previous two years, one 4-H boy from each county attended the 3-day forestry school held in Orono in conjunction with the state 4-H Club Camp in August of 1951 and 1952. Pulp and paper companies buying wood in Maine have helped to make these schools possible by cash contributions.

Bulletins and other printed material are available from county Extension offices and directly from the University of Maine, Orono. Extension Bulletin 430, Christmas Harvest, was printed

in May 1953. This publication covers the management of planted and natural Christmas tree stands.

Close cooperation between the Extension Service, the Maine Forest Service, and other agencies, both public and private, has strengthened the forestry programs of each group—research, teaching, and service.

CIVIL DEFENSE

The department followed civil defense programs closely and tried to cooperate with its officials in every way possible. Several wardens and service foresters participated in the training programs and took part in flying battalion squads.

The department provided the airplane spotter force with assistance. Major Lombardy, of the civil defense force, attended the 1952 fire warden training schools.

The forestry department's radio network is the only communication system that can provide quick information from many parts of Maine, as determined by 1952 trials.

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