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State of New Hampshire

**BIENNIAL REPORT**  
*of the*  
**FORESTRY DIVISION**  
**1959 - 1960**



Concord, New Hampshire

1961

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HARRY K. ROGERS

COMMISSIONER . . . . . 1929—1960  
CHAIRMAN . . . . . 1952—1960

## REPORT

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*To His Excellency the Governor  
and the Honorable Council:*

The Forestry and Recreation Commission submits herewith its report for the two fiscal years ending June 30, 1960. This consists of a record of the activities of the Forestry Division and brief accounts of related agencies prepared by the State Forester and his staff.

JASON C. SAWYER, *Chairman*  
OWEN JOHNSON  
HARRY K. ROGERS  
RANDALL E. SPALDING  
LAWRENCE C. HACKETT  
*Forestry and Recreation  
Commission.*

WILLIAM H. MESSECK, JR.  
*State Forester*

## INTRODUCTION

The 50th Anniversary of the Forestry Division took place in 1959. While the Forestry Commission had been in existence since 1881, it was on July 1, 1909 that Mr. Edgar C. Hirst took office as the first state forester; and a full-time state department came into being.

The primary concern then, as now, was protection of forests from destructive fires. No time was lost in the establishment of a fire lookout system and the inception of a town forest fire warden organization. The basis of our present enviable record in fire prevention and control may be found in the enabling laws of that early period which joined town and state together for mutual responsibility for forest fire control.

The credit for the achievements realized in the last half century belongs to those who guided and directed the department through those years, together with the loyal and devoted service of the town forest fire wardens and deputy wardens.

The last ten years have seen especially noteworthy progress in prevention and control of forest fires, climaxed in 1959 by New Hampshire attaining first place in the nation for the lowest percentage of area burned and average size of fire. Not only has the Forest Fire Service become more and more effective, but the cumulative effect of public education has borne fruit. There can be no relaxing of vigilance, but rather a constant effort to improve efficiency.

Forest insects and disease now lead fire as destructive enemies of our forests. No less impressive than our fire record is the conquest of white pine blister rust. Now about 96% of the blister rust control area has been placed on a maintenance basis, initial eradication of the disease carrying *Ribes* (currants and gooseberries) having been completed. No one need hesitate to grow white pine on account of blister rust hazard. However, here also, constant rechecking of areas following logging or blowdown is necessary in order to forestall recurrence of the disease. Much credit for this outstanding example of disease control goes to the energy and dedication of the blister rust staff plus new techniques in chemical control and the use of aerial photographs in mapping.

Another achievement has been the placing of state forests under management by a corps of trained foresters. This program is unique in that it is self-supporting through timber sales. State forests were established as demonstrations of forest management, not only for timber and wood production, but for "multiple use," including recreation, watershed protection, wildlife habitat, and to preserve scenic beauty.

Closely related to forest management is our state forest nursery, supplying planting stock not only to state and town forests, but also to the general public for forest planting in New Hampshire. During recent years the capacity of the nursery has trebled in size in order to supply increased demands for planting under the Soil Bank and other conservation programs. The expanded nursery area will permit crop rotation for better soil management.

Encouraged by a more equitable tax system private forestry has made signal advances, above all because of the service offered by county foresters and a large group of private consultants. Larger owners often have taken the lead in many respects. The problem still remains of reaching the estimated 35,000 small owners and convincing them of the importance of forestry so that they will actually do constructive work toward improving their forest stands.

The aim of the Forestry Division has been to provide the maximum service to the public at the minimum expense to the tax payer. As pointed out in detail in our last report increased costs have consisted almost wholly of personal services: salaries and wages. The number of employees supported by general funds has actually decreased.

It is with regret that we report the retirement of Harry K. Rogers, a member of the Commission since 1929, who served long as secretary and since 1952 as chairman. Mr. Jason C. Sawyer was chosen chairman in May 1960. Mr. Rogers has consented to continue as a member of the Commission until his successor is appointed and qualified.

Mr. Leonard E. Newman, who had been in charge of the blister rust control program for 43 years retired on June 30, 1959. A large debt of gratitude is due these men for their devoted service to forestry.



*White Pine in Cheshire County.*

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## FOREST FIRE SERVICE

RICHARD B. DIEHL, *Fire Control Assistant*

### Administration

*Objectives and Goals*—The primary purpose of the Forest Fire Service is to keep the loss from fire in New Hampshire's woodlands to the very lowest amount. Taking into account weather conditions which determine the amount of hazard, this loss has been held to a low figure for a number of years which shows up very favorably when compared to that of other states. Keeping this loss in hand is due in part to faster communication between detection and the town warden, improved fire fighting equipment in the towns, mutual aid between towns, and improved techniques in fire fighting, and in part to lowering the number of fires through prevention and enforcement. There is a growing respect for and knowledge of the fire laws and the basic necessity for being careful with fire.

The second objective is to achieve this low loss at a minimum of expense. Through savings, the basic budget of the Forest Fire Service (except for salary increases) has not increased materially in ten years. The funds to run the service come in part from Federal funds and part from state appropriations.

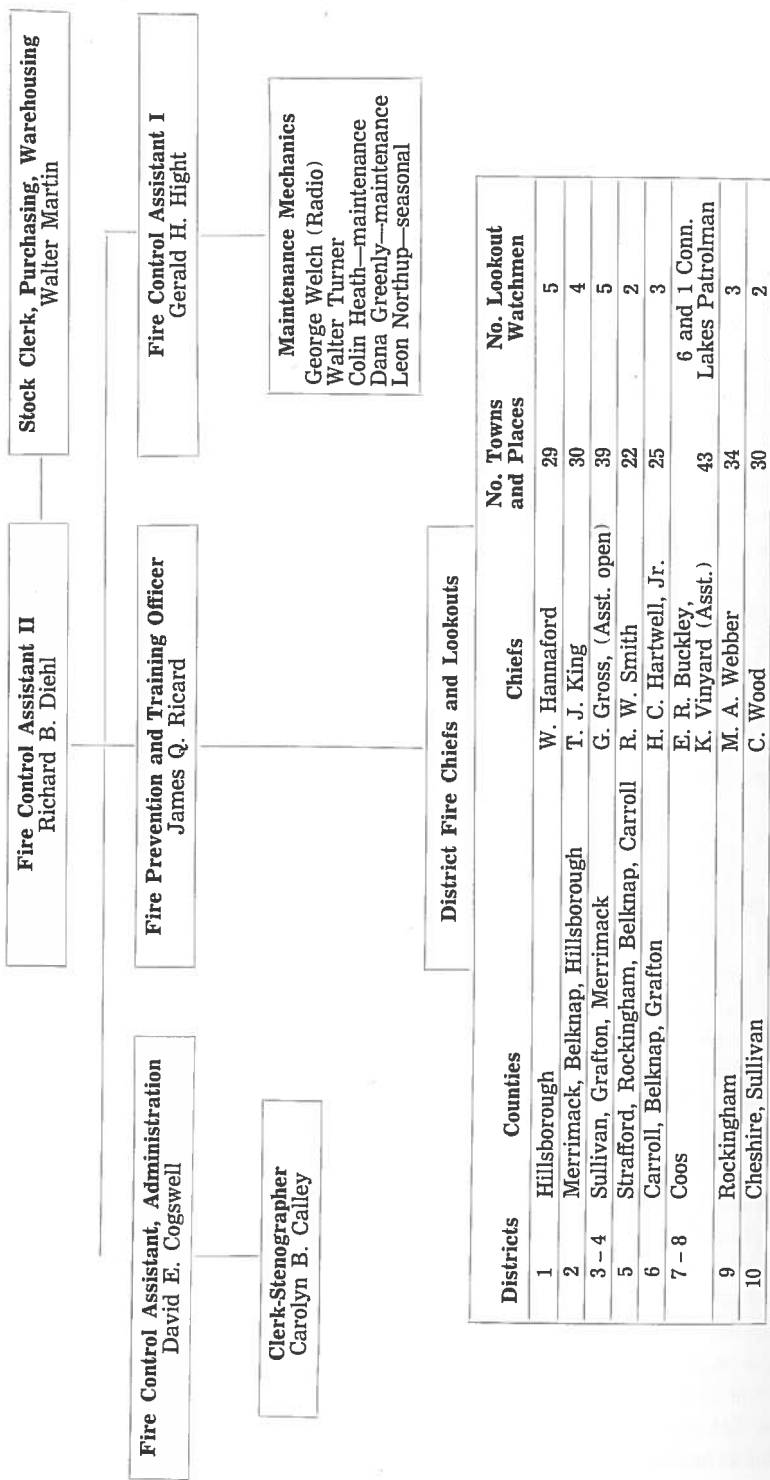
### Federal Funds and State Appropriations

Fiscal Year	Dollars	
1957	65,327	149,341
1958	63,100	162,622
1959	67,600	182,082
1960	71,600	176,376
1961	75,900	167,343

The present cost of prevention for protecting 4,182,000 acres of forests is a little over six cents an acre. This cost has risen an average of one-fifth of a cent an acre per year during the last ten years, which reflects mainly wage increases. Savings in reduced personnel, offsetting rising travel costs by bulk gas purchases, planned travel and limiting meal expense, elimination of rented office space, bulk purchasing when possible, and reducing telephone tolls through use of radio, all contributed to holding the line against rising costs. Equipment and supplies obtained through the Federal Government surplus program has helped in a large measure, but this program's greatest help has been in filling our needs for desirable items not possible to obtain on a budget. Many necessary items for fire control such as suitable pumps and hose are seldom if ever available in this program.

# FOREST FIRE SERVICE

## Organization as of November 1960



Districts	Counties	Chiefs	No. Towns and Places	No. Lookout Watchmen
1	Hillsborough	W. Hannaford	29	5
2	Merrimack, Belknap, Hillsborough	T. J. King	30	4
3 - 4	Sullivan, Grafton, Merrimack	G. Gross, (Asst. open)	39	5
5	Strafford, Rockingham, Belknap, Carroll	R. W. Smith	22	2
6	Carroll, Belknap, Grafton	H. C. Hartwell, Jr.	25	3
7 - 8	Coos	E. R. Buckley, K. Vinyard (Asst.)	43	6 and 1 Conn. Lakes Patrolman
9	Rockingham	M. A. Webber	34	3
10	Cheshire, Sullivan	C. Wood	30	2

**Maintenance Mechanics**  
 George Welch (Radio)  
 Walter Turner  
 Colin Heath—maintenance  
 Dana Greenly—maintenance  
 Leon Northup—seasonal

The third objective is reducing the number of fires. This is an uphill fight and to do it properly, more time of more personnel with the capabilities to sway public thought are needed. Much progress has been made however and now it is a question of balancing the added cost against the results.

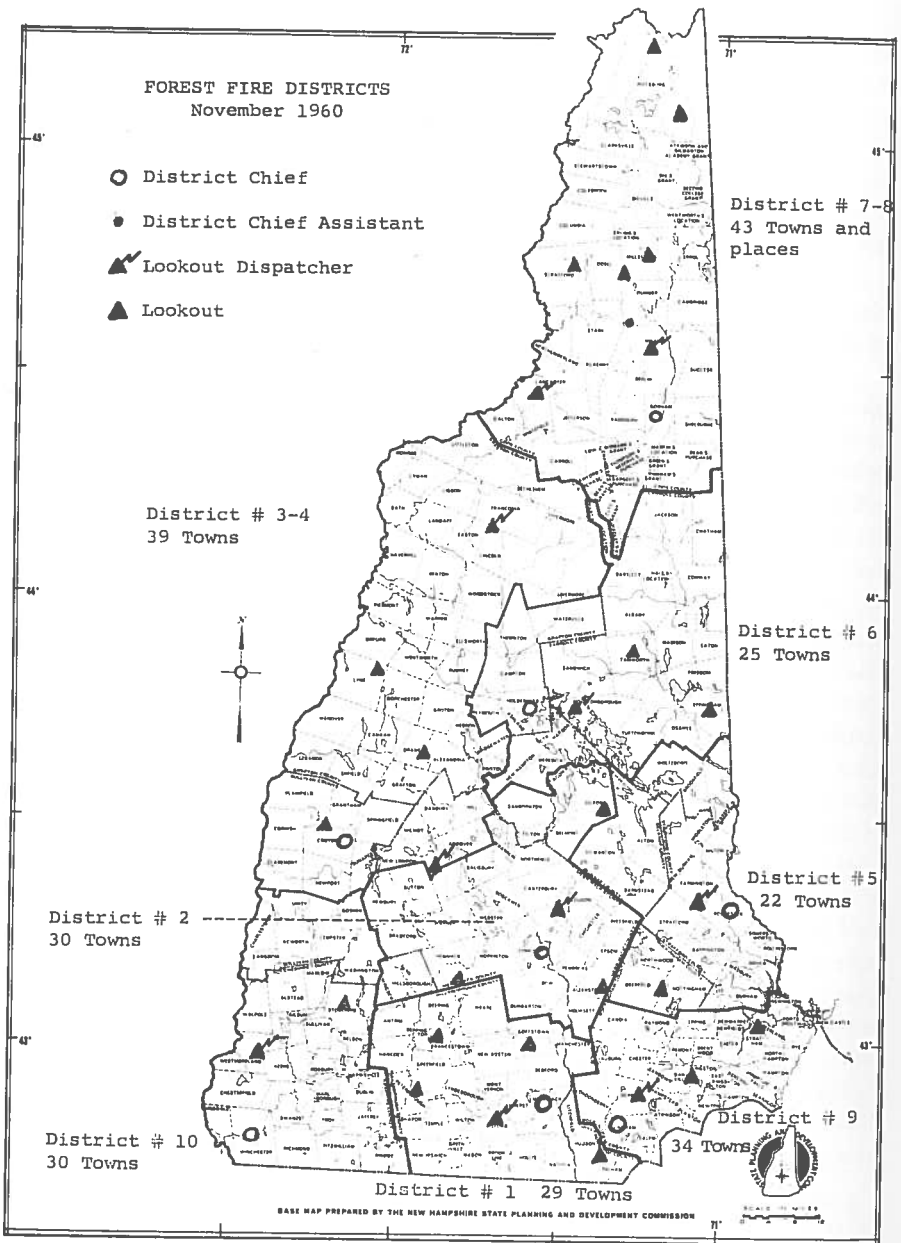
A further objective is one of recognition by the general public of the Forest Fire Service as an efficient organization serving its welfare. Uniforms, good equipment adequately maintained, well-kept lookout installations and store-houses all help this impression, but it is the devotion to a job and the hewing to a line by the field personnel that have impressed the people mostly. Sustained high attendance at various wardens' associations reflects the continued interest of the wardens and fire-minded people of the state.

Other goals which have been met are a 100-man fully equipped fire camp, adequate warehousing, and a meeting room. Goals nearly reached include a workable equipment and supply accountability system, state-wide, year-round radio communication, adequate fire hose and pumps, a level of maintenance that will keep our installations in top condition, and an efficient and dependable lookout force. Goals in training town fire personnel are restricted by lack of funds and restrictions on these funds.

*Personnel Changes*—District 7 Chief Harold Chase of Lancaster succumbed to a heart attack while attending a training meeting in Colebrook April 28, 1960. District 6 Chief Robert B. Smith of North Conway resigned on August 29, 1960. District 3 Assistant District Chief Gerald Gross of Croydon was raised to full district chief status in full charge of District 3. Kenyon Vinyard of Stark became seasonal Assistant District Chief to District Chief Emmett R. Buckley in administering the combined Districts 7 and 8. In the fall of 1960, district lines in the central part of the state were redrawn breaking up old District 4. Three of the southern towns in District 6 were added to District 5. The eastern towns in 3 and 4 were added to District 6 and this was assigned to District Chief Hartwell formerly in charge of District 4. The Coos County towns in old District 4 were added to old Districts 7 and 8. The balance of Grafton County towns in District 4 will be administered by a seasonal assistant district chief yet to be selected and will be otherwise under District Chief Gross. Three towns in southern Sullivan County were added to District 10 and one town in Belknap County to District 5. The map shows the new district breakdowns and locations of the district chief in each. It is believed that this rearrangement will better meet the year-round work loads and save on travel and winter work.

*50th Anniversary*—This biennium completed 50 years of the Forest Fire Service. This was the most important function of the Forestry Department when the first State Forester, Edgar C. Hirst, appointed the first fire wardens and worked with the timberland owners in opening the first state system of lookout towers in 1919, and it still is as important today. The progress over the years is recorded in the Biennial Reports of the Commission but its success is due to the principle of state and town joint responsibilities as spelled out in the original

REPORT OF FORESTRY DIVISION



laws. The last twenty years have seen the greatest advance in town volunteer fire company's equipment and housing and organization into mutual aid groups. The Forest Fire Service has kept abreast of this development, encouraging it and aiding in training and in equipment when possible. As a result, the state and town relationship is one of mutual respect and working together. Without these volunteer groups, the New Hampshire Forest Fire Wardens could never have achieved their nationally recognized record in fire suppression.

### Review of Forest Fire Conditions

*The 1958 Season (July 1 - December 31)*—July was cool with frequent rains, August warmer, but with frequent lightning storms. Occasional rains kept surfaces damp into November for a very favorable fire season. There was a general drop in ground water levels with many wells going dry. The largest fire was 28 acres of slash in New Ipswich on July 2nd.

#### NUMBER OF FIRES BY MONTHS

Month	Calendar Years 1959 - 60	
	1959	1960
March .....	2	
April .....	230	86
May .....	172	55
June .....	23	25
July .....	19	39
August .....	29	13
September .....	13	12
October .....	4	29
November .....		25
December .....	3	
<b>Totals</b> .....	<b>495</b>	<b>284</b>

#### NUMBER OF FIRES—AREA AND DAMAGE BY CAUSES

Causes	Total for Two Calendar Years 1959 - 1960		
	Number of Fires	Total Acres Burned	Damage
Lightning .....	29	4.65	\$318.00
Railroad .....	86	71.00	255.00
Lumbering .....	9	16.85	30.00
Campers .....	32	9.48	50.00
Smoking .....	192	242.99	2,505.00
Debris Burning .....	216	93.35	2,794.20
Incendiary .....	67	26.66	4,840.00
Miscellaneous .....	148	130.61	1,635.00
<b>Totals</b> .....	<b>779</b>	<b>595.59</b>	<b>\$12,427.20</b>

*The 1959 Season (January 1 - December 31)*—Following an unusually sustained cold winter which sent the frost down to record low levels, the snow persisted in the woods until mid-April. Bare fields and the frequency of grass fires necessitated the opening of lookout stations in the southern districts on April 8th. Generally dry weather continued in the south until May 22nd. During this period a rather large number of debris burning fires was reported, the highest occurrences being in the period April 15th to 26th with a daily burning index of 100 or more. Most of these fires were small grass areas but in the latter part of this period fires burned in the woods. Fire incidence rose again with a burning index of 100 plus for eight days until May 10th when some of the hottest fires of the season occurred. During this latter period all fires were kept to less than four acres except a 10½-acre slash fire in Amherst in which a child lost his life, and a 70-acre fire in old slash in Allenstown.

Frequent light rains in June and a cool, wet July were followed by a hot August with occasional light showers which kept the daily burning index low. Ground water levels continued to lower, however, until early fall when many wells, most swamps and small streams were dry. This brought on a critical condition in the higher spruce-fir types in the mountains of the northern part of the state where the duff is underlaid with ledge. This condition was eased by heavy rains in late October and November which replaced ground water and caused flash floods in the mountain streams resulting in heavy damage to highways and woods access roads. The road into Success Pond was very badly washed out. While frosts occurred in mid-September in the northern areas, some of the southern areas did not receive killing frosts until late October. Some lookouts remained open until early November.



*Storage and work space as well as offices and meeting room in this modern building on South Main Street in Concord.*

*The 1960 Season*—The winter was comparatively mild with good snow cover which held in the north and mountain areas until mid-April. Lookouts opened in the Merrimack Valley on April 10th. Aside from a few grass fires, frequent rains held the burning index and fire frequency down throughout the spring and early summer. Rainfall was light, however, and ground water levels dropped throughout the state but most notably in Coos County where streams and swamps were the lowest in years. Because of this condition extra patrols were put on in Coos County early in September and a no-smoking, no-open fires ban was in force in the same area from September 9th until the drought was ended by Hurricane Donna on September 12th. The burning index rose again during October especially in the south central area where burning permits were restricted for a period. Frosts were light until October 22nd and the first snow occurred in the southwestern part of the state on October 25th. Lookouts closed at the end of the month. Heavy rains on November 1st were followed by a period of strong dry winds and generally dry weather, resulting in abnormally high burning indexes for the month. With the open hunting season and the abundance of dry grass from uncut fields about the towns, the fire incidence was higher than in many years with children and hunters heading the list of causing agents. This condition continued until December 12th when the worst December blizzard in this century effectively ended the season. On the night of December 11th Warner fought a 14-acre woods fire in 20° temperatures evidently started from a hunter's warming fire. Altogether, the 1960 fire season had small loss in woodlands burned and a low number of fires considering the length of the fire season.

### **Maintenance**

*Central Supply Depot*—The central depot on South Main Street in Concord was completed. The woodwork was painted inside and out and the hose drying rack completed the interior fittings. The pine panelled conference room, fully supplied with chairs, tables and a rug from surplus government property, has filled a definite need for a meeting room.

The maintenance crew works in the warehouse during the winter on jobs that can be brought in. All field tool boxes were rebuilt or replaced to a uniform style, all tools reconditioned and painted, and the fire camp equipment, blankets and quilts were boxed for storage and handling. Tent poles were color keyed to the tents, and kits of tent pegs and rope were placed in labeled boxes. A number of small structures were built to house standby generators at the lookout stations. New identification and directional signs were made for the lookouts. The roadside signs, nicely mounted on an ornamental ironed cross bar, give the name of the station and the distance to the tower. Trail and parking signs are the same style. Signs were made for all field boxes. Three fair exhibits were constructed. Two toilet buildings, some wall cabinets, screens and shutters were made. The metal boxes for each warden were sanded, painted, lettered and distributed.

*Lookout Maintenance*—During the season when outdoor work was possible, four men of the maintenance crew were working on some of the 125 structures in our system. When the work was within reasonable driving distance the men traveled from their homes; on work further removed they lived at the site. One unusual accident took up much of the maintenance crew's time in 1960. On February 11th, a heavy lightning strike completely blew the tower cab off the Miller Park tower, burning out the radio and electrical wiring at the summit. The cab was completely rebuilt.

Other new structures were garages at Smarts, Cannon, Sugar Loaf and Signal Mountains, and a new cabin at the base of Sugar Loaf Mt. to replace an old logging camp used as a base camp.

The following repairs and replacements were made since the last biennium:

<i>Bear Hill</i>	Completed painting the tower; repaired tower roof; installed overhead map.
<i>Belknap Mt.</i>	Tower roof replaced; cabin painted; tower and cab painted; foundation of tower recemented; cement block chimney built on cabin and new wall map installed overhead in tower.
<i>Blue Job Mt.</i>	Telephone line changed over to power line; garage stained.
<i>Cannon Mt.</i>	Some windows in tower replaced; new linoleum installed in tower; new garage built at cabin.
<i>Crotched Mt.</i>	Survey made for land acquisition on mountain and possible power line.
<i>Croydon Mt.</i>	Extensive work done on telephone line.
<i>Deer Mt.</i>	Tower painted; inside of cabin changed over and improved with cement block chimney.
<i>Federal Hill</i>	Road greatly improved with cold patch; tower and cab painted; inside of cabin rearranged, rebuilt and repainted.
<i>Great Hill</i>	Repaired road; improved drainage; replaced siding on tower cab with boards and clapboards; tower cab painted; storehouse wired.
<i>Green Mt.</i>	Road repaired; tower painted.
<i>Hyland Hill</i>	Garage moved to state land near tower; weather station moved and fenced; tower roof rebuilt; interior of cabin rearranged, rebuilt and painted.





*Miller Park tower cab destroyed by lightning February 1960.  
When enlarged cab was built, no steel was  
used above floor.*



*Rebuilt cab in 1960 with lightning protection. Standard  
practice is to evacuate towers during lightning storms.  
Cabins have lightning protection.*

## LOOKOUT STATION STATISTICS

Station	Number of Smokes Discovered		Reported Number of Fires		Number of Visitors Registered	
	1959	1960	1959	1960	1959	1960
Bear Hill	15	65	15	48	129	804
Belknap Mt.	162	167	88	146	1,601	2,251
Blue Job Mt.	543	583	291	246	1,941	2,030
Cannon Mt.	294	286	91	101	16,289	14,520
Cardigan Mt.	48	40	48	40	4,471	5,466
Craney Hill	219	205	31	36	460	399
Crotched Mt.	452	395	91	27	1,115	1,471
Croydon Mt.	70	58	8	55	59	19
Deer Mt.	3	3	3	2	68	114
Federal Hill	98	127	43	28	418	552
Great Hill	25	48	4	24	298	365
Green Mt.	80	39	35	38	1,203	718
Hyland Hill	130	36	35	30	156	369
Jeremy Hill	340	301	63	33	435	699
Kearsarge Mt.	169	163	53	41	7,844	8,560
Magalloway Mt.	15	5	9	1	40	14
Milan Hill	5	14	5	2	493	679
Miller Park	63	22	38	13	5,712	2,260
Oak Hill	236	210	136	112	521	362
Pawtuckaway Mt.	570	503	184	181	1,089	1,158
Pitcher Mt.	35	14	6	7	866	1,923
Prospect Mt.	37	40	37	27	4,472	931
Red Hill	134	104	105	75	1,135	866
Rock Rimmon	114	27	42	27	618	686
Signal Mt.	1	5	1	2	28	19
Smarts Mt.	50	49	47	42	270	363
Stratham Hill	62	46	62	46	3,079	2,784
Sugar Loaf Mt.	6	33	6	12	28	40
Uncanoonuc Mt.	280	347	54	49	1,075	1,431
Warner Hill	49	84	49	84	331	663
Total	4,305	4,019	1,680	1,575	56,244	52,516

*Jeremy Hill* Tower and cab painted; new sink drain and saddle boards installed.

*Kearsarge Mt.* Cabin and porch finished, painted and wired; lightning rods and hold-down cables installed. (Old cabin struck by lightning and burned.)

*Magalloway Mt.* Raised cabin on new sills; stub cement block chimney built; tower step supports drilled and bolted and new steps installed; new window sash put in tower; new siding put on camp at Barrel Brook.

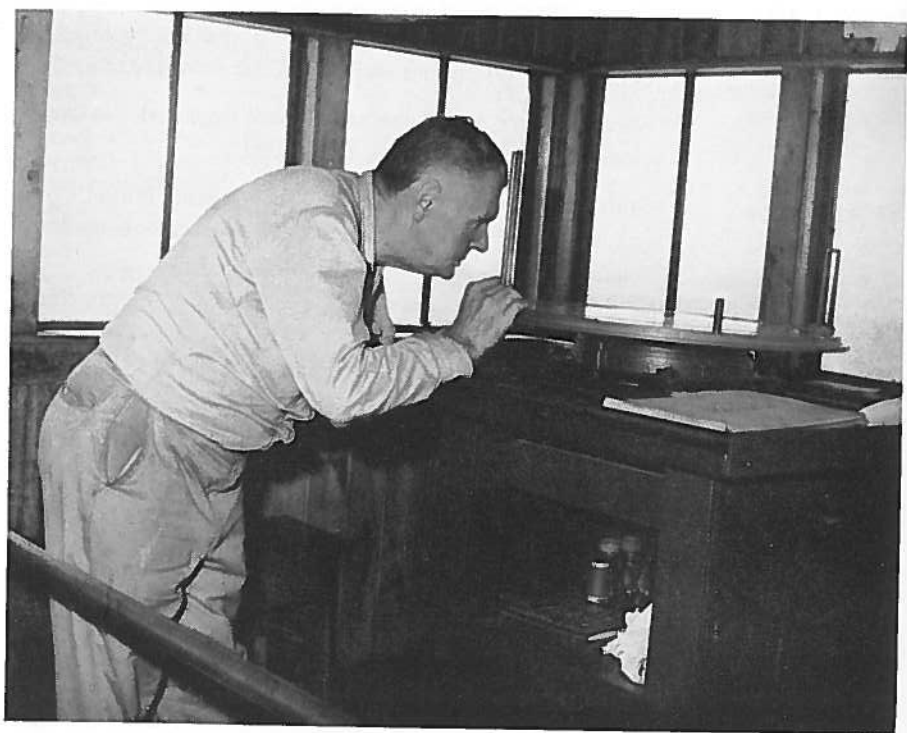
*Milan Hill* Woodshed rebuilt.

<i>Miller Park</i>	Tower cab rebuilt; refinished and painted; lightning rods replaced.
<i>Oak Hill</i>	Garage and cabin shingled; tower cab painted outside; extensive road repairs made.
<i>Pawtuckaway Mt.</i>	Tower painted; trees cut around tower; new poles put in telephone line; cabinets built in kitchen.
<i>Pitcher Mt.</i>	Tower painted; cabin supports replaced; block chimney rebuilt after being blown over; new screens installed on tower and cabin.
<i>Prospect Mt.</i>	Tower cab repaired, woodwork around windows replaced; open space above ceiling closed in; cottage repaired including rear porch and stairs, roof edge, walls and ceiling.
<i>Red Hill</i>	Spring covers and generator house repaired; extensive cleanup of brush done by watchman.
<i>Rock Rimmon</i>	Stair tread supports on tower drilled and bolted; road gravelled and graded; extensive replacement made of telephone poles and telephone lines.
<i>Signal Mt.</i>	Garage erected; tower painted.
<i>Smarts Mt.</i>	Garage erected at foot of trail; road repaired with new culverts and gravel.
<i>Sugar Loaf Mt.</i>	Telephone line improved; base cabin completely rebuilt; garage built.
<i>Uncanoonuc Mt.</i>	An adjoining radio tower fell on the tower cab in a wind-storm. The resulting damage was repaired under contract with the expectation of insurance coverage. The case is still unsettled. Cabin interior repainted; new toilet built at tower.

Stoves were replaced at Sugar Loaf Mt. base camp, Pitcher Mt., Cardigan Mt., and Hyland Hill. New tower stoves replaced oil burners at Green Mt., Red Hill, Sugar Loaf Mt., and Deer Mt. New beds were needed for Rock Rimmon and Hyland Hill. Ten stations received surplus Navy binoculars. Refrigerators were brought to Stratham Hill, Rock Rimmon, Federal Hill, Uncanoonuc Mt., Kearsarge Mt., Prospect Mt., Blue Job Mt., Belknap Mt. and Craney Hill. All stations had the usual replacement of household furnishings and supplies.

Many of the watchmen have greatly improved the grounds about their stations, and the general level has advanced. Long-range planning included larger quarters, white sinks, better cabinet and closet space. The rough woodsman's

cabin is gradually disappearing. Garages need wider doors and access roads need improvement to accommodate the modern car. Of the thirteen stations yet without electric power, only Crotched Mt. and Oak Hill are within the probability of receiving power. Gas refrigerators may be in order as transportation improves.



*Veteran Watchman Dave Gegan on Kearsarge Mt., a key communications station for southern New Hampshire.*

## Forest Fire Equipment

*Budgeted Purchases*—New sedans were purchased for King, Webber, R. W. Smith and Hannaford. A new station wagon was purchased for Ricard and a Volkswagen pickup for Gross. Three sedans, two station wagons and one pickup were turned in. Two Pacific Marine WX10 pumps were purchased, one of which replaced the old Type Z at Milford. A purchase was made of 4,000 feet of linen hose packed in hose bags for replacement and this was added to inventory; 2,000 feet of rubber-lined hose was allotted for replacement of hose stored with the towns. A number of hand fire tools and back pumps were purchased to replace those in tool boxes and trucks. An air hammer, cement mixer, saber saw and electric drill supplemented maintenance equipment.

*General Services Administration*—The Forest Fire Service took full advantage of the offers of surplus equipment from government agencies through the General Services Administration. During the biennium the rules were changed so that all items not new were made available for forest fire protection at no cost to the state. During a few months in the spring of 1960 even new items were offered without cost. This was later changed to 20% of acquisition cost for new items. A great variety and quantity of large and small items useful in the Forest Fire Service were secured.

Aside from lumber, paint and hardware items used in maintenance, most equipment items secured are desirable items not approved in previous budgets. Three tank trucks (mostly old oil trucks) and four old fire trucks were turned over to the towns in the condition in which we received them. The towns agreed to insure, house them, and have them available for use on forest fires in their own and other towns. This program aids towns and areas where such equipment is not too plentiful. Towns receiving trucks were Redstone (Conway), Albany, Litchfield, Londonderry, Henniker and Colebrook. Similarly, five pickup trucks were placed in North Hampton, Durham, Rumney, Franconia and at the Aerial Tramway. Thirteen weapons carriers were obtained of which seven were distributed as follows: Tamworth, Effingham, Wolfeboro, Hooksett, Lisbon, Sunapee and Hollis. Some of the twenty-five new Marlow centrifugal pumps suitable for filling tank trucks were distributed to the following towns: Landaff, Orford, Hollis, Wolfeboro, Winchester, Keene, Effingham, Bartlett, Dummer, Newport, Canaan, Londonderry, Auburn, Henniker, Weare, Rochester, Tamworth, Errol and Carroll. Four Johnson 500 Navy portable pumps will be distributed about the state as follows: Chesterfield has a part of the Civil Defense Amphibious Duck stationed there, Concord warehouse, Great Hill storehouse and Lancaster storehouse. Thirty 650 watt 110 v. AC generators for standby power will be distributed to all lookout stations having electricity. These are also used in connection with battery chargers to run mobile radios in a stationary position.

## REPORT OF FORESTRY DIVISION

FIRE RECORD BY COUNTIES—FIRST 6 MONTHS FISCAL YEAR 1959  
(July 1, 1958 - Dec. 31, 1958)

County	Number of Fires	Area Burned—Acres		Damage		Cost of Fighting Fire	
		Total Area	Average Per Fire	Total	Average Per Fire	Total	Average Per Fire
Belknap .....	6	4	.66	\$ None	.....	\$510.99	\$85.16
Carroll .....	8	3	.37	None	.....	326.37	40.87
Cheshire .....	9	6	.66	5.00	.56	337.75	37.52
Coos* .....	6	1	.16	120.00	20.00	425.52	70.92
Grafton .....	10	2	.20	None	.....	621.58	62.16
Hillsborough .....	17	32	1.88	206.00	12.11	2,835.19	166.77
Merrimack .....	11	6	.54	65.00	5.90	1,420.49	129.13
Rockingham .....	17	7	.41	None	.....	616.71	36.27
Strafford .....	10	5	.50	None	.....	214.63	21.43
Sullivan .....	50	5	.50	75.00	7.50	1,040.09	104.00
Totals .....	104	71	.68	\$471.00	\$4.52	\$8,449.92	\$81.24

\* Includes unincorporated places.

REPORT OF FORESTRY DIVISION

FIRE RECORD BY COUNTIES FOR CALENDAR YEARS 1959 - 1960

County	Year	Number of Fires	Area Burned—Acres		Damage		Cost of Fighting Fire	
			Total Area	Average Per Fire	Total	Average Per Fire	Total	Average Per Fire
Belknap	1959	38	12	.31	\$862.20	\$22.68	\$1,248.00	\$32.84
	1960	14	2	.14	50.00	3.57	282.75	20.19
Carroll	1959	39	54	1.38			1,254.99	32.17
	1960	11	31	2.81			2,384.17	216.74
Cheshire	1959	69	34	.49	1,650.00	23.91	2,228.20	32.29
	1960	25	4	.16	60.00	2.40	636.92	25.47
Coos*	1959	22	7	.31	2,065.00	93.86	719.06	32.68
	1960	26	7	.37	30.00	1.15	1,110.28	42.70
Grafton	1959	44	89	2.02	1,065.00	24.20	3,177.43	72.21
	1960	28	5	.19	35.00	1.25	1,762.09	62.93
Hillsborough	1959	83	25	.30	215.00	2.59	1,285.49	15.48
	1960	66	8	.12	35.00	.53	1,717.85	26.02
Merrimack	1959	64	109	1.70	440.00	6.87	2,842.77	44.42
	1960	43	65	1.51	675.00	15.69	1,944.17	45.21
Rockingham	1959	76	38	.50	370.00	4.86	1,426.55	18.77
	1960	28	13	.46	52.00	1.85	721.82	25.77
Strafford	1959	29	53	1.82	370.00	12.75	1,058.88	36.51
	1960	24	2	.08			190.50	7.93
Sullivan	1959	31	35	1.13	4,435.00	143.06	375.00	12.13
	1960	19	2	.11	18.00	.94	400.01	21.05
Totals	1959	495	456	.92	\$11,472.20	\$23.17	\$15,616.37	\$31.54
	1960	284	139	.49	955.00	3.36	11,150.56	39.26
Grand Totals		779	595	.76	\$12,427.20	\$15.95	\$26,766.93	\$34.36

\* Includes unincorporated places.

### Miscellaneous Equipment Acquired

- 15 Six and twelve volt heavy duty battery chargers.
- 2 1500 watt 110 volt portable generators.
- 1 Compressor truck used for drilling rock on lookout roads.
- 1 Fork lift on pneumatic tires for off-pavement use.
- 3 Trailers, two of which have tanks for water carrying.
- 1 Gorman-Rupp skid pump.
- 4 Movie projectors. These were repaired and assigned to districts so that each district now has one available.
- 3 Sedans for administrative use.
- 46 Navy 7 x 50 binoculars for lookouts and district personnel.
- 4 Levels.
  - 1 Transit.
  - 1 Drafting set.
- 3 Portable typewriters, 1 adding machine.
- 6 Large folding tanks and 1 water purification unit.
- 21 Heavy duty 6 volt batteries for radio use with generators.
  - 2 Small cast iron stoves for lookout station cabs.
  - 2 Chain hoists.
- 1,000 Feet of rope for all purposes.
  - 30 Steel mast sections for radio and amateur masts.
  - 30 Radio antennas for mobiles and base stations.
- 1 Light tractor with bulldozer and winch for use on lookout roads.
- 1 Public address system complete with turntable.
- 8 Tarpaulins.
- 92 First aid kits for all vehicles and tool caches.
- 20 Pairs snowshoes for lookout use in early spring.
- 2 Lookout towers, nearly complete, salvaged at old New Boston bombing range.
- 2 Map cabinets.
- A quantity of 3 x 4s lumber, plywood, hardboard and flooring for maintenance and construction. Blankets, comforters, cots, mattresses, mattress covers, mosquito bars, tents, tent bags, tent poles, tent pins, meat slicer, beverage containers, cooking pots, kitchen utensils, stove repair kits, coffee urn, sleeping bags, air mattresses, knapsacks, clipboards, ponchos, folding tables and field desks for fire camp use. Tables and chairs for lookout and training camp use. Nails, steel tape, belt sander, bench grinder, electric hammer, bits, carpenter kits, tool kits for maintenance. Coveralls and gloves for all personnel. Wire rope for lookout guys and general use. A number of Quonset style insulated blanket huts for semi-permanent living quarters.

*Radio Communications*—New radio base stations added to the forestry 31.90 network in the biennium were the fire departments of Weare, Moultonboro, Hampton Village, Newton, Pelham, Boscawen and Center Sandwich, Warden Caraway in Epping, Hale in Center Harbor, Red Hill lookout station in Moultonboro and the Boy Scout camp in Gilmanton. Thirty-seven mobile units were added as well as a number of portables. The latest radio lists show 91 base stations of which twenty-seven are in the department, and 272 mobiles of which twenty-six are in the department. With 120 mobiles in cars of forestry personnel, wardens and fire chiefs, this makes a potent communications force, highly mobile and useful in any emergency. There is a definite need for twenty-four hour, all-year service for this group and the fire trucks. A relay station on Mt. Kearsarge in Warner tied in with a fire department on twenty-four hour service will provide this. Civil Defense would share the cost of this installation.



*Fire Tools for Resale to Towns*—This program which has built up and maintained a substantial tool inventory in the towns is handled through our Concord warehouse. Tools and back pumps are sold to the towns at one-half their cost. Distribution is usually through the district chief. These tools in the towns are inspected at least once a year by the district chief and are listed on the town resources sheets.

### Fire Tools Sold to the Towns Fiscal Years 1959-1960

28 Galvanized back pumps	37 Single bit axes
240 Brass back pumps	30 Hazel hoes
21 Canteens - 1 gal.	62 Headlights (electric)
3 Water cans - 5 gal. (drinking)	24 Kerosene lanterns
261 Water pails	1 Cross cut saw
146 Long handle shovels	4 Pulpwood saws
6 Short handle shovels	8 Pulaski tools
146 Council tools	8 Repair kits (back pump)
34 Kinney rakes	105 Fire brooms (rattan)
60 Maine type fire axes	

*Town Warden Maps*—Maps with the grid system are the basis for locating fires in New Hampshire. Placing the grid on a geological survey map of a town, mounting it and preserving it is an expensive process and previously the Forest Fire Service could afford maps only for the wardens. In 1959 a method of reproducing maps photographically was adopted. Under this program, the state prepared the base map for the negative and the mounting board; the towns paid \$1.00 per map and placed them in the hands of all their deputies. This has saved time in locating fires when the lookout cannot reach the warden.

### Fire Prevention

*Importance*—The prevention of forest fires has assumed more importance and is taking more time of the field personnel. Our preventive work with the control of hazards such as slash areas, dumps, and inspection of incinerators is routine. We are reaching more and more groups with films and talks. Carelessness with fire is being recognized by more persons as an act that is not only unlawful but is definitely not popular with the neighbors. Children can be reached and are being reached, but this is necessarily a never-ending endeavor. The tragedy is that one child who did not learn this lesson lost his life.

It is important to investigate fires both for their true causes and to find the persons responsible. In the case of children, it is important that they admit their part in starting the fire. Such investigations take time but the end result is a child or children won over to our cause. District chiefs find that work with school children is rewarding.



*District Chief Hannaford working with boys to secure their cooperation in fire prevention. Fires caused by children are on the increase.*

*Smokey Bear Program*—The greatest appeal to youth is the Smokey Bear program conducted by Fire Prevention and Training Officer James Q. Ricard. The Smokey Bear costume with Big Smokey and Little Smokey, and the appeal to the children's patriotism and desire to conserve our forests and cherish wild things, makes an indelible impression. The Smokey Bear symbol is being recognized not only for forest fire prevention but for general conservation of our natural resources. The demands on Mr. Ricard's time on this one program are greater than that available. He was selected as the National Smokey Bear and presented this program at the International Boy Scouts Jamboree in Colorado in 1960.

*Ban Procedures*—In cooperation with the Fish and Game Department and the Federation of Forest Fire Wardens Associations, a standard procedure for putting on woods closures was adopted. The five-step procedure provides an orderly increase in prevention efforts in the form of restrictions as the fire danger increases. A list was also completed of access points to ponds where fishing is permitted from boats during a woods closure. This information on procedures and open ponds was published in the Fish and Game law book. Wardens keep a supply of the two types of ban posters on hand for use when notified by the lookouts for action.

*Prevention Signs*—Old fire prevention signs that were badly weathered were removed from the highways in most places. New signs featuring Smokey and the daily fire weather were erected on our two throughways. This program anticipates placing more of these signs along our highways. The posters and counter cards supplied by the Cooperative Forest Fire Prevention campaign were widely distributed. Our own weather-proof fire prevention and law posters were placed in the usual public places by the wardens.

*Prevention at Town Level*—The town forest fire warden can be the key man in prevention work by 1) being strict but fair in requiring permits for all outside burning, 2) by prompt investigation of smokes and taking action to follow through, 3) by posting his town, 4) by keeping the townspeople informed of the fire danger in the local newspapers and warning of the need for permits, 5) by inspecting fire sources such as incinerators, fireplaces and dumps, 6) by contacting new people in town to get their cooperation.

Wardens who have followed this procedure have found that they have lower suppression costs and a rising public response. A few wardens have been well rewarded for their work in the schools. The state Forest Fire Service personnel have responded to help out in fire prevention work in schools, public and organizational meetings.

*Railroad Fires*—In the spring of 1960, we started having an unusual number of fires along railroads in all parts of the state, but especially on the Boston and



*New fire danger signs keep the traveling public informed of fire danger.*

Maine lines. After many investigations and a number of conferences with Boston and Maine officials the fuel mixture for the diesels was changed. This cut down the number of fires, but some fires continued. While most of these fires were confined to the right-of-way, a few caused some real damage and all involved a great deal of suppression effort. When the railroads changed to diesel locomotives they gave up the practice of burning their rights-of-way and as a result there is always plenty of hazardous fuel along the track. Mr. Ricard has been handling all fire matters dealing with railroads and an order of procedure was set up for the presentation of reports and the payment of bills.

*Construction Clearing and Burning*—With the accelerated highway program and the flood control project in the Hopkinton-Weare area, the clearing and disposal of slash became a major fire problem. Following conferences with highway officials, an arrangement was worked out that all contractors and sub-contractors must agree to have adequate equipment and follow the safe rules of burning including cooperating with the warden on the time to burn. Strict adherence to these rules and good cooperation with contractors has practically eliminated trouble from this source.

*Law Enforcement and Investigations*—When a fire has occurred it is only fair to all concerned that an effort be made to find how that fire started. Such investigations take time and interrupt schedules but the results generally justify this. Investigations may be conducted by the warden, the district chief, or by the prevention and training officer. Often two men working together have obtained results after the single man has failed to turn up the clue. As fires involve people, the object is to find the fire setter and change his attitude. With children and with most home owners this is generally successful. Occasional flagrant abuse of the fire laws leads to necessary enforcement through legal action. Cases brought into court have increased in recent years with a resulting growing respect for our fire laws. There is always a backlog of fire causes that need further investigation.

*Training Program*—In the training school, the warden and deputy receive instruction on practical approaches to prevention and each is encouraged to devote more effort to this. Money spent by the warden in time and travel for inspection of incinerators and potential hazards is small compared with the suppression costs of even one fire.

*Visual Aids*—The Cooperative Forest Fire Prevention campaign has purchased a number of short films on prevention. Region 7 U. S. Forest Service and the states cooperated in the production of a new film, "There Comes a Tomorrow," that deals with the problem of fires as they affect the community. These and the older films are in constant circulation. In order to meet the demand for films, the Forest Fire Service continued to maintain its own film library loaning films free to New Hampshire residents.

The Forest Fire Service has continued to stress prevention at its exhibits at the dozen fairs and sportsman shows held each year. The appearance of Smokey

at these affairs and the various street fairs and parades always draws a great deal of attention.

### Forest Protection in Unorganized Towns

This program financed from yield tax funds received a boost in 1959 by the establishment of a work camp in Millsfield. Besides receiving training as an emergency "hot-shot" crew, these young men re-spotted and cleared trails, repaired bridges and culverts, and rebuilt telephone lines in Odell, Millsfield and Erving's Location. They were quartered in Quonset huts and had the use of a logging camp by the courtesy of the International Paper Company. This camp did important work, but proved too expensive in terms of output per dollar expended, and was abolished in 1960.

During the rest of the period local hired help and equipment carried out the following:

<i>Cambridge</i>	Rebuilt two bridges; cleared brush out of roads to Camp # 1 and Camp # 2. Swamped 3 miles of trail to Klondyke Mt.; cleared away the beaver dam on old road 46; reswamped Cambridge Mt. Road and Hedgehog Nubble Road.
<i>Success</i>	Opened up North Brook access road 4½ miles to Camp # 1; spotted and swamped 2½ miles to Success Pond.
<i>Millsfield</i>	Repaired flood damage on access roads and Whitcomb Mt. Road; reswamped Jack Knife Hill trail; repaired telephone line and repaired washout; reswamped 7 miles on trail up West Branch of Clear Stream.
<i>Dixville</i>	Bungy Hill road reswamped to Kelsey Notch; repaired bridge on Mud Pond trail.
<i>Academy Grant</i>	Repaired access road, Hellgate to Forks.
<i>College Grant</i>	Repaired telephone line to Hellgate.
<i>Erving's Location</i>	Made two pump sets. (Water holes)

It is expected that there will be \$10,000 a year available for this work. Since this is to be used in the towns where it is collected it leaves some towns such as Success where no funds are available, with a washed-out road to Success Pond. Two trailers equipped with portable pumps and hose and a set of aerial photos of the unorganized towns were purchased. There is need for storage facilities and 4-wheel drive vehicles to haul the trailers.

## Training

*Special Deputy Training*—The funds for instruction of special deputies were divided to allow for in-district training and a state-wide, two-day training camp. The amount of instruction received in the districts varied according to the amount of voluntary time put in by the deputies, some district groups meeting regularly each month. Two field meetings were held, one in June 1959 at the Mt. Cardigan Reservation, and one in June 1960 at the Hemenway Tract. Subjects covered in instruction included fire camp set up, administration of the fire line activities, bulldozer operations in line construction, use of the compass, portable pump operation and relay, telephone, radio, and timekeeping. Advance preliminary planning by the training team made these meetings a success.

*Warden Training*—The training teams method was continued in the biennium. In the spring of 1959 eight combined field and inside instruction afternoon and evening meetings were held. District Chiefs Hartwell, Smith and Gross covered the field instruction on portable pumps, hose lines and relays. Diehl covered acreage measurement and Ricard presented a prevention program. The local district chief discussed administrative problems. As has been the custom in recent years, Districts 7 and 8 combined their instruction at a meeting in Berlin in March 1959.

The 1960 training team of Ricard and Diehl covered the state in thirty evening meetings covering "Introduction to Fire Behavior" and presuppression,



*Hyland Hill—Fire Weather Station*

planning and prevention. The local district chief took up district administration. These meetings were well attended and received.

The district chiefs held numerous training meetings with local fire department groups showing films and discussing forest fire suppression. There is a need for a state sponsored training program to reach the volunteer fireman other than on a strictly volunteer basis. Present budgeted training funds are limited to state and town sharing of the cost of training wardens and deputies.

### **Northeastern Forest Fire Protection Commission**

*District Chief Training*—New Hampshire Commissioners during the biennium were Robert S. Monahan representing the legislature, Wakefield Dort as the Governor's representative and State Forester William H. Messeck, Jr. Wakefield Dort served as chairman of the Commission 1958-1960. The Commission published its second manual based on the subjects taught at the training meeting entitled, "Techniques and Methods of Forest Fire Control."

Annual training meetings were held at the Highway Hotel in Concord, N. H. in February. The following were some of the subjects covered:

- Use and interpretation of fire records and data.
- Conference type training.
- Safety hazards on the fire line.
- Meteorological factors affecting fire behavior.
- Direct attack from the air.
- Man power management.
- Fundamentals of ignition and combustion.
- The development of a national fire danger rating system.
- Training of volunteer firemen in forest fire suppression methods.
- Fire prevention planning.
- Helicopters - their types, operators, capabilities and safety.
- Use of magnetic chalkboard as a teaching technique.
- Developments in forest fire research.
- Review of lines and plans section.

A change in subject matter from the teaching by instructors to material that can be used by the trainees in fire control occurred in the 1960 training school. Plans for 1961 include a field exercise in the control of a hot running fire.

### *Cooperation With Other Agencies*

The Forest Fire Service participated in Civil Defense exercises both at state and district level and has made available its radio communication system for transmission of Civil Defense messages. Standby power generators are being installed to keep this system in operation in case of power failure.

The facilities of the Forest Fire Service and its personnel have always been ready to aid in search and rescue operations. After a conference on this subject

held at Pease Air Force Base, plans were drawn up listing the facilities of all agencies available for such emergencies. Our personnel helped in the search for two lost planes and loaned equipment for a search for a third. They participated in the search for at least ten lost persons.

When floods washed out the Balsams Hotel at Dixville Notch, our district men aided the Fire Marshal in securing pumping equipment for fire protection for the buildings until the water system was repaired. We lost a complete tool cache in this flood. Similar aid was given by loaning a pump to the Wentworth Hotel in New Castle.

Our district chiefs worked with the State Board of Health in inspecting sites for town dumps. Approval of such sites is dependent on the meeting of certain requirements regarding prevention of fires that may escape. The Forest Fire Service also cooperated with the Tax Commission by reporting woods operations not registered with the towns. The Tax Commission's lists of woods operations are a great help in locating possible slash violations. The Forest Fire Service's communications system is often used for emergency messages to the state and local police and to Conservation Officers.

The summer drought in 1960 in Quebec, New Brunswick and the mountains extended to northern and eastern Maine. In the latter part of August, fires in these areas taxed the facilities of the Maine Forest Service and in response to a call through the Northeastern Forest Fire Protection Commission, New Hampshire dispatched to Maine five portable pumps and ten thousand feet of 1½" linen hose. A standby call for sector bosses was cancelled.

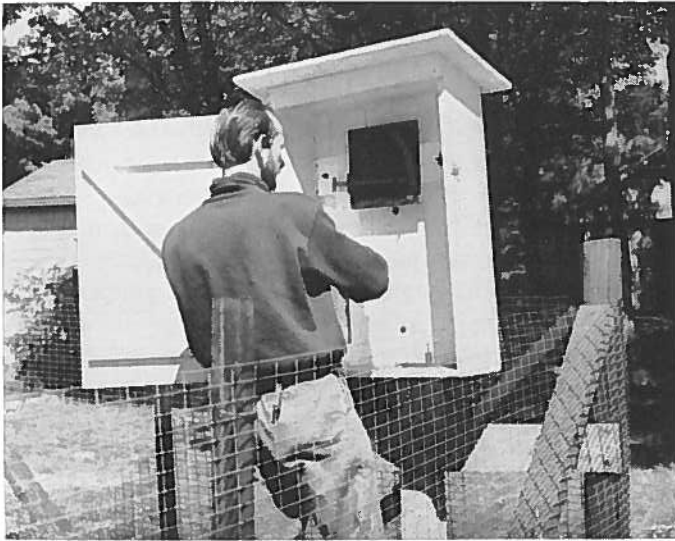
The White Mountain National Forest was host to Forest Service and National Forest fire control men in the spring of 1959 at a demonstration of the use of aircraft in fire control. This demonstration, held at Whitefield and Bethlehem, demonstrated the capabilities of airplanes and helicopters in direct and indirect control of forest fires. The special equipment used in this work was shown and explained. District chiefs in the northern districts aided and the Forest Fire Service furnished some equipment.

The New Hampshire Timberland Owners Association invited all wardens and deputies in Coos County to their annual meeting banquet in March 1959. On the afternoon prior to this, these men received fire training from a Forest Fire Service training team. The Association celebrated in 1960 their 50th year of organization with a banquet at the Waumbek Hotel in Jefferson to which all wardens and their wives in Coos County were invited. The Forest Fire Service participated in some of the many demonstrations at this meeting. The speaker was Stewart Holbrook, formerly of Coos County.

The Forest Fire Wardens Associations and its Federation are independent organizations made up of wardens, deputies, firemen, their wives, and persons interested in fire control and conservation. These ten associations meet monthly in various towns in their area, usually with a meeting and program following a supper. Forest Fire Service personnel are always in attendance and aid and



participate in the programs. Resolutions originating in the associations are considered by the Federation. Many of the proposals have become a basis for fire laws or a part of the activities of the Forest Fire Service.



*Oak Hill—Fuel Moisture Scales*

## REGISTRATION OF WOOD-PROCESSING MILLS

DAVID E. COGSWELL

*Administrative Fire Control Assistant*

All sawmills and other wood-processing mills are required by law to be registered for each calendar year. The fee for Class I, commercial mills, is \$25.00 per year (\$10.00 after October 1st) and \$10.00 for Class II, part-time or farm mills (\$3.00 after October 1st). Pulp and paper mills are not required to register since they produce no inflammable residues. Registered mills are inspected from time to time by the district fire chiefs to see that all fire preventive measures required by law are being observed.

## REPORT OF FORESTRY DIVISION

No water-power mills were registered during this period and a growing number of mills report diesel power. At one time most portable mills were steam-powered, which created a high fire hazard.

**NUMBER OF MILLS REGISTERED**  
(Calendar Year)

Type	1959		1960	
	Class I	Class II	Class I	Class II
Sawmill .....	226	44	213	41
Sawmill with planing mill .....	34	4	26	3
Planing mill only .....	14	6	12	4
Shingle mill .....	—	—	—	—
Excelsior mill .....	4	—	1	—
Veneer mill .....	2	—	2	—
Other .....	19	4	21	4
<b>Totals</b> .....	<b>299</b>	<b>58</b>	<b>275</b>	<b>53</b>
<b>Power</b>				
Steam and combination .....	29	3	27	4
Gasoline .....	72	41	59	36
Diesel .....	138	4	129	4
Electric .....	60	10	60	9
<b>Totals</b> .....	<b>299</b>	<b>58</b>	<b>275</b>	<b>53</b>

**Number of Mills Moving to New Settings During the Year**

	Stationary	Number of Moves							
		1	2	3	4	5	6	7	More than 7
1959 .....	227	35	11	12	5	5	2	0	2
1960 .....	216	26	7	11	3	7	2	3	0

**Receipts from Registration Fees**

	Class I		Class II		Total	
	No.	Amount	No.	Amount	No.	Amount
1959 .....	299	\$7,445.00 (2)	58	\$573.00 (1)	357	\$8,018.00 *
1960 .....	275	\$6,785.00 (6)	53	\$509.00 (3)	328	\$7,294.00 **

\* Includes 2 mills at \$10.00, 1 mill at \$3.00.

\*\* Includes 6 mills at \$10.00, 3 mills at \$3.00.

## WHITE PINE BLISTER RUST CONTROL

### Introduction

New Hampshire was the first state to establish an organized cooperative control program with towns, cities and individuals for the protection of eastern white pine against the disease of white pine blister rust. The first organized scouting for blister rust in New Hampshire was carried on in 1916, and organized currant and gooseberry eradication crews started during the summer of 1917, both projects being financed by cooperative state and federal funds. In 1918 a cooperative policy for the participation of the federal, state and municipal governments, and private individuals was established for the eradication of gooseberry and currant bushes on the white pine growing areas of New Hampshire for the control of white pine blister rust. The current policy for obtaining funds to carry on the white pine blister rust control program is much the same as established in 1918. The improved methods of destroying currant and gooseberry bushes along with improved techniques of scouting, mapping, and pine and control area surveys, have substantially reduced the costs of this control program to towns and individuals in spite of the increased costs of labor and materials.

### Control of the Rust

The forty-four years of this intensive program for the control of blister rust have paid immeasurable dividends in the growth of disease-free, eastern white pine on a large percentage of the white pine lands of the state. The success of this program can be attributed directly to the cooperating agencies and the individuals involved in the endeavor to control this devastating forest disease. Present reports indicate blister rust to be under control on 95 percent of the pine-producing lands of New Hampshire. The same reports indicate no further control work is needed on 13 percent of the pine-producing lands, since administrative studies show certain factors inhibiting the spread of the rust in specific locations, and the non-regeneration of the host plants (currants and gooseberries) on certain types of soil. The foregoing statements do not indicate that the job has been completed; much work lies ahead in maintaining the control established and establishing control on approximately 122,000 acres where the disease is uncontrolled or only partially controlled.

### Organization

Originally the state was divided into ten districts with a federal agent assigned to each district and responsible for all phases of blister rust control work and information on the disease. These districts were established and the federal agents were given the above authority through cooperative agreements between the U. S. Department of Agriculture and the State of New Hampshire



*Blister rust canker. Note shrunken trunk of tree on left.*

Forestry Department. Down through the years, as control of the disease was established on sizable portions of the pine-growing areas of the state, the districts have been gradually reduced, and on March 15, 1960 the districts were reduced to two. At present, district headquarters are located in Keene and Laconia. Assisting the two district leaders are seven full-time state field supervisors. Sub-district headquarters, for the state field supervisors, are maintained in Manchester, Lebanon and Littleton. The reduction of the district leader personnel has greatly increased the responsibilities of the field supervisors in administrative and informational work.

Mr. L. E. Newman retired on June 30, 1959, after having been in charge of blister rust control program in New Hampshire for 43 years. The vacancy left by Mr. Newman is being filled temporarily by personnel on loan, on a part-time basis, from the U. S. Forest Service.

### **Pine and Control Area Surveys 1959-1960**

Due to the never-ending changes in forest conditions, constant surveys of forest lands are necessary to determine regeneration of the host plants, currants and gooseberries, and possible development of "hot-spots" for the spread of blister rust. In preparation for the 1959 and 1960 eradication seasons, detailed mapping, and surveys for pine and ribes conditions were conducted in road blocks scheduled for control work. These surveys were made by personnel experienced in all phases of blister rust control work. In recent years the use of aerial photographs has substantially reduced the cost of mapping and surveys by immediately making available much information previously determined by ground surveys which consumed many man hours of skilled labor.

### **Eradication**

The present day methods of destroying currants and gooseberries are confined almost exclusively to the use of silvicides, and these have proven more



*Blister Rust exhibit at a county fair.*

economical and effective than the previous methods of hand grubbing the bushes.

Other activities connected with the blister rust eradication program involved nursery sanitation inspections and experimental use of antibiotics to kill active blister rust cankers on pine. Satisfactory conditions were found in the nurseries and there was no need for intensive eradication work. The use of antibiotics on cankered white pine had limited experimental use on study plots well distributed throughout the white pine growing area of the state. Results, while not conclusive, indicated some favorable reactions.

### Cooperative Control 1959-1960

Financing was continued as a cooperative effort. The State of New Hampshire, the U. S. Forest Service, towns and cities, and one private concern provided funds for the program. In 1959, 86 towns and cities, and one private company provided \$20,461, and in 1960, 96 towns and cities provided \$18,798.45 for the program. Federal control funds, not needed for the operation of federal vehicles and purchase of supplies, were made available to the state on a reimbursement basis.

### BIENNIAL SUMMARY—BLISTER RUST CONTROL Town, State and Federal 1959 and 1960

All Programs	First Working		Re-Working		Maintenance	
	Area Covered Acres	Ribes Destroyed Number	Area Covered Acres	Ribes Destroyed Number	Area Covered Acres	Ribes Destroyed Number
1959 .....	1,676	3,079	66,690	283,991	195,821	254,794
1960 .....	1,990	7,790	54,246	145,518	236,261	115,899
Totals .....	3,666	10,869	120,936	429,509	432,082	370,693

### Control Studies

Experimentation was continued in the use of silvicides to destroy currants and gooseberries, and of antibiotics to kill blister rust cankers on pine. Although a more effective and economical control program was established through the use of silvicides, further experimental work is needed to bring about more uniformity in spray solution formulae for use during the various growing seasons of the year. In the use of antibiotics as a canker killing agent, so little of a conclusive nature was found that the use of antibiotics as a control measure cannot be considered at this time. Permanent ribes-infection plots were established in 1959 in all counties of the state. Data will be taken from these plots yearly and compared from year to year.

### Control Measures Effective

A brief analysis of the Biennial Summary shows that an average of 2.8 ribes were found per acre on first workings and re-workings; and 0.8 ribes per acre on maintenance workings. This is indicative of the effectiveness of the white pine blister rust control program in New Hampshire.



*Gooseberry bushes growing among sedges.*

## FOREST PEST CONDITIONS

J. G. CONKLIN, *State Entomologist*

*Gypsy Moth*—In 1958, for the first time in many years, no areas of noticeable defoliation by the gypsy moth could be found anywhere in the state. In 1959, however, some 40,000 acres were defoliated to the extent of 50-100% by this insect.

*Beech Scale*—The beech scale has continued its range and has been found in nearly half the towns of the state. In some stands, the combination of beech scale and beech nectria disease has accounted for substantial tree mortality.

*Balsam Woolly Aphid*—The balsam woolly aphid continues on the increase especially in areas within the White Mountain National Forest.

*Needle Miners*—Hemlock and arborvitae in many areas were attacked by needle miners (*Recurvaria spp.*) in 1959. Oaks, especially red and white, were noticeably browned during 1959 as a result of the unusual abundance of the oak blotch leaf miner.

*Pine Leaf Aphid*—The pine leaf aphid attracted considerable attention in the spring of 1960 when the browned white pines were much in evidence in many areas of the state.

*Satin Moth*—The satin moth, which has been at a low population level for some years, caused heavy defoliation of ornamental poplar in the City of Berlin in the spring of 1960 but no noticeable defoliation was found in any woodland areas.

*Dutch Elm Disease*—The Dutch elm disease continues to exact a heavy toll of shade trees throughout the State. Some increase in community interest in Dutch elm disease control is reflected in the annual increase in amounts of money being appropriated for shade tree care in many New Hampshire communities.



## STATE FORESTS AND RESERVATIONS

THEODORE NATTI, *Chief, State Lands and Forest Operations*

### Acquisitions and Sales

Several changes in state land ownership occurred during this biennium, most important of which were the establishment of a new state park at Greenfield, and the sale of the Clough and Everett State Forests to the U. S. Army Corps of Engineers. Following is a listing and brief description of these and other transactions involving land under the jurisdiction of the Forestry and Recreation Commission (July 1, 1958 to June 30, 1960).

### Purchases

*Fox*—A total of 269 $\frac{3}{4}$  acres of forest land adjoining the Fox Forest was acquired in three separate transactions. A tract of 191 acres, recently cutover but well stocked with natural softwood reproduction, was purchased from the estate of the late Harold E. Harvey. Another 77 acres was purchased from Raymond A. Sprague, and a small tract of 1 $\frac{3}{4}$  acres from Clarence D. and Mary P. Wilber. Fox Forest now totals 1376 acres.

*Greenfield*—A 278 $\frac{1}{4}$  acre area was purchased from the Town of Greenfield and six private owners at Otter Lake, a site chosen by a legislative commission, as established by Chapter 249, Laws of 1957, for a new state park. The grantors and respective acreages were as follows: John T. and Rachel E. Robertson—25 acres; Albert J. and Beatrice J. Maison—12 acres; William R. and Lorraine Kimil— $\frac{1}{4}$  acre; Lon F. and Nellie Atherton—193 acres; George F. Shea—20 acres; and Town of Greenfield—28 acres.

*Sculptured Rocks*—Twelve acres were purchased from Mrs. Alice Hancock of Hyde Park, Massachusetts to provide more adequate scenic protection of this geological phenomenon, and to increase the parking area. Sculptured Rocks Reservation now totals 13 acres.

### Gifts

*F. A. Gardner Wayside Area*—A tract of 7.80 acres was transferred from the Highway Department to the Recreation Division on May 31, 1955. No previous report had been made of this transfer.

*Madison Boulder*—A gift of 6 acres by the New England Box Co. insures more adequate scenic protection of this area of geological interest.

### Sales

#### *Clough State Forest and Everett State Forest*

These two very productive and beautiful forest areas were purchased by the U. S. Army Corps of Engineers as part of Hopkinton—Everett Flood Control

## REPORT OF FORESTRY DIVISION

## ACQUISITIONS 1959-60

Purchases	Tract	Town	Acres	Cost
	Fox	Hillsboro	269.75	\$3,550.00
	Greenfield	Greenfield	278.25	92,165.00
	Sculptured Rocks	Groton	12.00	750.00
	Totals		560.00	\$96,465.00

## Gifts

*F. A. Gardner				
Wayside Area	Shelburne	7.80	from Highway Dept.	
Madison Boulder	Madison	6.00	from N. E. Box. Co.	
Total		13.80		

## Sales

Clough	Weare	378.00	\$54,000.00
Everett	Dunbarton	65.00	
Fox Forest	Hillsboro	.50	650.00
Powow River	South Hampton	4.25	1.00
Totals		447.75	\$54,651.00

## Changes in Area

Coleman	Stewartstown	65.00	(reduction due to corrected survey)
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## Summary

	Acres	Cost	Receipts
Acquisitions and additions	573.80	\$96,465.00	
Sales and reductions	512.75		\$54,651.00
Net addition	61.05		

\*\* Previously reported 6/30/58 63,742.25 acres

Total area 6/30/60 63,803.30 acres

\* Transaction of May 31, 1955 not previously reported.

\*\* 1957-58 Biennial Reports in error by 19 acres because of listing of Clough tract as 459 acres instead of 478 acres.

LEASES OF STATE LAND 1959-60

Reservation	Lessee	Address	Purpose	Fee
Annett	Monadnock Rod & Gun Club	East Jaffrey, N. H.	Archery Course	\$15.00
Beech Hill	Public Service Co.	Manchester, N. H.	Right-of-Way	10.50
Belknap Mt.	Community TV Corp.	Laconia, N. H.	Right-of-Way	10.00
Blair & Livermore Falls	Public Service Co.	Manchester, N. H.	Right-of-Way	10.00
Cardigan Mt.	Appalachian Mt. Club	5 Joy St., Boston, Mass.	Campsite	10.00
Connecticut Lakes	Hildreth A. Bourn	36 Wall St., Wellesley, Mass.	Campsite	10.00
Crawford Notch	Clifford McGlaflin	98 Exchange St., Portland, Me.	Campsite	20.00
Crawford Notch	Mrs. Alta M. Rhodes and Mrs. Mildred Young	Lancaster, N. H.	Campsite	20.00
Fox	Ramegin Bowmen	Hillsboro, N. H.	Archery Course	1.00
Franconia Notch	Public Service Co.	Manchester, N. H.	Right-of-Way	7.50
Hemenway	Boy Scouts of America	Boston, Mass.	Scouting	25.00
Kingston Dam	James K. Selden	42 School St., Andover, Mass.	Building Site	400.00
Lead Mine	Exeter & Hampton Electric Co.	Exeter, N. H. (20 years)	Power Line	100.00
Lead Mine	Portland Pipe Co.	Portland, Me. (20 yrs. from 1941)	Pipe Line	40.00
Rocky Pond	Portland Pipe Co.	Portland, Me. (20 yrs. from 1950)	Pipe Line	40.00
Russell-Abbott	Lena Leavitt	Old Loudon Rd., Concord, N. H.	Campsite	20.00
Scribner-Fellows	Public Service Co.	Manchester, N. H.	Right-of-Way	9.52
Sky Pond	Public Service Co.	Manchester, N. H.	Right-of-Way	10.00
Wantastiquet Mt.	N. H. Electric Corp.	Plymouth, N. H.	Right-of-Way	3.00
	Central Vt. Public Service Co.	Rutland, Vt.	Right-of-Way	2.00

Area. The entire 65 acres of the Everett State Forest and 378 acres of Clough State Forest were taken. Approximately 100 acres of the latter remain, being that area purchased from William A. Heino in 1953. The Clough tract is the site of one of the dams being developed under this flood control project.

*Coleman*—A reduction in recorded acreage from 1200 to 1135 acres was necessary. No precise boundary survey had previously been made of this area.

*Fox Forest*—A  $\frac{1}{2}$  acre lot was sold to Raymond A. Sprague. This lot adjoined the Sprague property and was of no special need to the state. The sale enabled Mr. Sprague to make better use of his existing ownership.

*Powow River*—The Town of South Hampton was deeded a 4.25 acre lot, this being a part of the Powow River tract reserved in 1933 by the town for use as a ball field. Because the town wished to make major improvements to the ball field area, boundaries mutually agreeable to the selectmen and the state were surveyed and a deed passed.

## ALPHABETICAL LIST OF STATE FORESTS AND STATE PARKS

June 30, 1960

No.	Year of first Acquisition	Name	Area (acres)	Acquisition Cost
1.	1916	Allen .....	25	Gift
2.	1915	Alton Bay .....	214	\$522.50
3.	1921	Ames .....	15	Gift
4.	1922	Annett .....	1,369	Gift and \$4,000.00
5.	1934	Ayers .....	50	Gift
6.	1915	Baker .....	5	Gift
7.	1953	Ballard .....	85	Gift
8.	1916	Bear Brook .....	7,303	Gift and \$7,845.00
9.	1921	Beech Hill .....	23	Gift
10.	1928	Belknap Mountain .....	545	\$2,250.00
11.	1934	Belle Isle .....	2	Gift
12.	1931	Binney Pond .....	77	Gift
13.	1919	Black Mountain .....	699	\$4,132.00
14.	1924	Blair .....	112	\$800.00
15.	1916	Blue Job .....	174	\$1,300.00
16.	1931	Bowditch-Runnells .....	56	Gift
17.	1951	Bradford Pines .....	5	Gift
18.	1918	Cardigan Mountain .....	5,525	\$18,783.00
19.	1916	Carroll .....	29	Gift
20.	1931	Casalis .....	230	Gift
21.	1901	Cathedral and White Horse Ledges .....	245	Gift and \$500.00
22.	1936	Chesterfield Gorge .....	15	Gift
23.	1943	Cliff Isle .....	6	Gift
24.	1953	Clough .....	100	Gift and \$600.00
25.	1957	Coleman .....	1,135	\$3,000.00
26.	1935	Connecticut Lakes .....	1,548	Gift
27.	1927	Connecticut River .....	216	\$1,000.00
28.	1920	Contoocook .....	47	\$120.00
29.	1917	Conway Common Lands .....	930	Gift and \$1,412.00
30.	1920	Craney Hill .....	24	\$1,124.00
31.	1913	Crawford Notch .....	5,950	\$110,000.00
32.	1945	Curtiss Dogwood Reservation .....	14	Gift
33.	1947	Cushman .....	26	Gift
34.	1915	Davisville .....	32	\$125.00
35.	1937	Dixville Notch .....	137	\$1,370.00
36.	1919	Dodge Brook .....	222	\$648.00
37.	1951	Annie Duncan .....	113	Gift
38.	1949	George Duncan .....	100	Gift
39.	1914	Duncan Lake .....	100	Gift
40.	1874	Dustin Island .....	1	Gift
41.	1947	Eaton .....	36	Gift
42.	1943	Echo Lake .....	151	Gift and \$10,620.00
43.	1956	Ellacoya .....	54	\$75,000.00
44.	1936	Fay .....	211	Gift
45.	1947	Federal Hill .....	1	\$100.00
46.	1933	Forest Lake .....	420	Gift and \$3,000.00
47.	1922	Fox .....	1,376	Gift and \$12,400.00

## REPORT OF FORESTRY DIVISION

No.	Year of first Acquisition	Name	Area (acres)	Acquisition Cost
48.	1928	Franconia Notch .....	6,552	Gift and \$206,500.00
49.	1932	F. A. Gardner .....	8	Gift
50.	1929	Gay .....	120	Gift
51.	1933	Gov. Wentworth Farm .....	96	Gift
52.	1925	Grant .....	8	Gift
53.	1922	Green Mountain .....	15	
54.	1959	Greenfield State Park .....	278	\$200.00
55.	1933	Hampton Beach .....	50	\$92,165.00
56.	1911	Harriman-Chandler .....	395	Gift
57.	1944	Hatch Grove .....	1	Gift
58.	1908	Haven .....	95	Gift
59.	1932	Hemenway .....	1,958	Gift
60.	1916	Hodgman .....	18	Gift
61.	1918	Honey Brook .....	975	Gift and \$4,465.00
62.	1927	Hubbard Hill .....	709	\$2,800.00
63.	1943	Humphrey's Ledge .....	36	Gift
64.	1939	Hyland Hill .....	20	\$250.00
65.	1936	Intervale Ski Slope .....	13	Gift
66.	1917	Jeremy Hill .....	63	\$825.00
67.	1917	Kearsarge Mountain .....	2,918	Gift and \$7,146.50
68.	1916	Kimball .....	25	Gift
69.	1937	Kingston Dam .....	10	Gift
70.	1933	Kingston Lake .....	44	\$3,500.00
71.	1956	Kona Farm .....	315	\$100,000.00
72.	1935	Lead Mine .....	202	Gift
73.	1915	Leighton .....	75	Gift and \$30.00
74.	1916	Litchfield .....	291	Gift and \$1,056.00
75.	1916	Livermore Falls .....	134	\$910.00
76.	1929	Lord Pines .....	12	Gift
77.	1951	W. M. Lord .....	75	Gift
78.	1946	Madison Boulder .....	17	Gift
79.	1921	Marshall .....	20	Gift
80.	1916	Mascoma .....	232	\$1,100.00
81.	1915	Mast Yard .....	480	\$2,819.00
82.	1932	Meadow Pond .....	42	Gift
83.	1927	Merrimack River .....	151	\$1,780.00
84.	1913	Merriman .....	515	Gift and \$150.00
85.	1935	Milan Hill .....	127	\$1,065.00
86.	1891	Miller Park .....	83	Gift
87.	1905	Monadnock .....	699	Gift
88.	1934	Moose Brook Park .....	755	\$9,475.00
89.	1957	Mt. Major .....	60	Gift
90.	1941	Mt. Prospect .....	430	Gift
91.	1948	Mt. Sunapee State Park .....	1,787	Gift and \$9,980.00
92.	1920	Nottingham .....	16	\$200.00
93.	1949	Oak Hill .....	2	\$625.00
94.	1947	Page .....	7	Gift
95.	1951	Page's Corner .....	78	Exchange
96.	1923	Pawtuckaway .....	1,384	Gift and \$6,800.00
97.	1925	Pierce .....	13	Gift

No.	Year of first Acquisition	Name	Area (acres)	Acquisition Cost
98.	1939	Pierce's Island .....	5	Gift
99.	1920	Pillsbury .....	3,702	Gift and \$5,305.00
100.	1925	Pitcher Mountain .....	5	Gift
101.	1940	Plummer's Ledge .....	3	Gift
102.	1929	Pot Holes and Bear's Den .....	95	Gift
103.	1933	Powow River .....	48	Gift
104.	1931	Province Road .....	1,026	Gift and \$1,920.00
105.	1934	Ragged Mountain .....	76	Gift
106.	1940	Randolph Springs .....	3	Gift and \$100.00
107.	1950	Red Hill .....	10	Gift
108.	1946	Rhododendron .....	294	Gift
109.	1934	Rock Rimmon .....	47	\$470.00
110.	1915	Russell .....	25	Gift
111.	1939	Russell-Abbott .....	808	Gift and \$206.00
112.	1936	Rye Harbor .....	160	Transfer
113.	1918	Scribner-Fellows .....	140	Gift
114.	1935	Sculptured Rocks .....	13	Gift and \$750.00
115.	1915	Sentinel Mountain .....	243	\$1,212.00
116.	1935	Shadow Hill .....	34	Gift
117.	1944	Shakers .....	236	Gift
118.	1949	Silver Lake .....	80	\$18,000.00
119.	1936	Sky Pond .....	119	Gift
120.	1951	Smith .....	50	Gift
121.	1926	Soucook .....	50	\$250.00
122.	1914	State Forest Nursery .....	887	\$6,020.00
123.	1925	Stevens .....	4	Gift
124.	1933	Strawberry Hill .....	60	Gift
125.	1916	Sugar Hill .....	67	Gift
126.	1949	Sunapee Lake .....	18	Gift and \$2,500.00
127.	1920	Taylor .....	12	Gift
128.	1935	Toll Gate .....	119	Gift and \$100.00
129.	1936	Vincent .....	636	Gift and \$4,500.00
130.	1953	Wade .....	331	Gift and \$1,200.00
131.	1934	Wadleigh Park .....	52	Gift and \$100.00
132.	1915	Walker .....	47	Gift
133.	1901	Wallis Sands .....	1	Transfer
134.	1943	Wantastiquet Mountain .....	907	Gift
135.	1945	Warner Hill .....	2	\$400.00
136.	1908	Webster .....	150	Gift
137.	1931	Wellington Beach .....	97	Gift
138.	1923	Welton Falls .....	223	Gift and \$1,000.00
139.	1934	Wentworth Beach .....	17	Gift
140.	1954	Wentworth Coolidge .....	6	Gift
141.	1933	White Lake .....	603	\$39,500.00
142.	1933	Woodman .....	141	Gift
<b>Total</b>			<b>63,805</b>	<b>Total cost to State \$798,026.00</b>

## SUMMARY BY TYPE OF ACQUISITION

How Acquired	No.	Percent of Total Number	Area Acres	Percent of Total Area
Gift alone .....	74	52	9,913	15.5
Gift with additional purchase ..	27	19	33,313	52.0
<b>Total Gifts .....</b>	<b>101</b>	<b>71</b>	<b>43,226</b>	<b>67.5</b>
Purchase only .....	38	27	20,340	32.2
Exchange or transfer .....	3	2	239	0.3
<b>Totals .....</b>	<b>142</b>	<b>100</b>	<b>63,805</b>	<b>100.0</b>

The acreage figures in the above list are rounded to the nearest acre, and hence do not correspond exactly to the totals shown under the head of "Acquisition" on Page 42. Careful surveys show areas of all reservations in fractions of acres.

Not included in the above lists are a large number of islands in great ponds (10 acres or over) and in navigable rivers and other waters the title to which rests in the state. Some of these have been set aside by Acts of Legislature. No accurate survey has been made of the area of such islands.



## TOWN AREAS OF STATE FORESTS AND PARKS

JUNE 30, 1960

Town	Total Acres of State Land in Town	Name of Reservation	Total Acres in each Reservation	Other Towns in which Reservation lies with area in each
Acworth	203	Honey Brook	975	Lempster 144, Marlow 628
Alexandria	872	Cardigan Mt. Welton Falls	5,525 223	Orange 4,876
Allenstown	4,816	Bear Brook	7,303	Candia 290, Deerfield 1,832, Hooksett 365
Alton	274	Alton Bay Mt. Major	214 60	
Amherst	18	Hodgman	18	
Andover	288	Kearsarge Mt. Ragged Mt.	2,918 76	Salisbury 375, Warner 1,743, Wilmot 588
Ashland	44	Scribner-Fellows	140	New Hampton 96
Bartlett	785	Cathedral & White Horse Ledges Humphrey's Ledge Merriman Intervale Ski Slope	245 36 515 13	Conway 24
Bethlehem	86	Cushman Strawberry Hill	26 60	
Boscawen	587	Merrimack River N.H. Forest Nursery Hannah Dustin Island	151 887 1	Salisbury 452
Bow	78	Page's Corner	78	
Bradford	5	Bradford Pines	5	
Bristol	172	Belle Isle Cliff Isle Sugar Hill Wellington Beach	2 6 67 97	
Campton	246	Blair Livermore Falls	112 134	
Canaan	232	Mascoma	232	
Candia	290	Bear Brook	7,303	Allenstown 4,816, Deerfield 1,832, Hooksett 365
Canterbury	278	Ayers Shakers	50 236	Northfield 8
Charlestown	925	Connecticut River Hubbard Hill	216 709	

## TOWN AREAS OF STATE FORESTS AND PARKS

JUNE 30, 1960

Town	Total Acres of State Land in Town	Name of Reservation	Total Acres in each Reservation	Other Towns in which Reservation lies with area in each
Chesterfield	539	Chesterfield Gorge	15	
		Pierce's Island	5	
		Wantastiquet Mt.	907	Hinsdale 388
Concord	205	Allen	25	
		Mast Yard	480	Hopkinton 359
		Taylor	12	
		Walker	47	
Conway	1,105	Cathedral & White Horse Ledges	245	Bartlett 221
		Conway Common Lands	930	
		Echo Lake	151	
Dalton	420	Forest Lake	420	
Deerfield	2,049	Bear Brook	7,303	Allenstown 4,816, Candia 290, Hooksett 365
		Pawtuckaway	1,384	Nottingham 1,255
		Woodman	141	Northwood 53
Deering	239	Vincent	636	Henniker 8, Weare 389
Derry	87	Ballard	85	
		Warner Hill	2	
Dixville	137	Dixville Notch	137	
Dorchester	480	Province Road	1,026	Groton 546
Dublin	75	Leighton	75	
East Kingston	36	Eaton	36	
Eaton	1	Hatch Grove	1	
Effingham	15	Green Mt.	15	
Farmington	174	Blue Job	174	
Fitzwilliam	302	Grant	8	
		Rhododendron	294	
Franconia	3,212	Franconia Notch	6,552	Lincoln 3,340
Franklin	150	Webster	150	
Gilford	599	Belknap Mt.	545	
		Ellacoya Beach	54	
Gilmanton	49	Meadow Pond	42	
		Page	7	

## TOWN AREAS OF STATE FORESTS AND PARKS

JUNE 30, 1960

Town	Total Acres of State Land in Town	Name of Reservation	Total Acres in each Reservation	Other Towns in which Reservation lies with area in each
Gilsum	95	Pot Holes and Bear's Den	95	
Gorham	755	Moose Brook	755	
Goshen	440	Pillsbury Mt. Sunapee	3,702 1,787	Washington 3,295 Newbury 1,754
Greenfield	278	Greenfield	278	
Greenville	4	Russell	25	Mason 21
Groton	559	Province Road Sculptured Rocks	1,026 13	Dorchester 480
Hampton	50	Hampton Beach	50	
Hart's Location	5,925	Crawford Notch	5,950	Livermore 25
Haverhill	699	Black Mt.	699	
Henniker	47	Ames Vincent Craney Hill	15 636 24	Deering 239, Weare 389
Hill	331	Wade	331	
Hillsboro	1,389	Fox Franklin Pierce	1,376 13	
Hinsdale	388	Wantastiquet Mt.	907	Chesterfield 519
Hollis	80	Silver Lake	80	
Hooksett	365	Bear Brook	7,303	Allenstown 4,816, Candia 290, Deerfield 1,832
Hopkinton	406	Contoocook Mast Yard	47 480	Concord 121
Jaffrey	915	Annett Gay Haven Monadnock	1,360 120 95 699	Rindge 1,169, Sharon 190
Keene	23	Beech Hill	23	
Kingston	101	Kingston Lake Kingston Dam Rock Rimmon	44 10 47	
Lancaster	430	Mt. Prospect	430	

## TOWN AREAS OF STATE FORESTS AND PARKS

JUNE 30, 1960

Town	Total Acres of State Land in Town	Name of Reservation	Total Acres in each Reservation	Other Towns in which Reservation lies with area in each
Lempster	366	Dodge Brook Honey Brook	222 975	Acworth 203, Marlow 628
Lincoln	3,482	Fay Franconia Notch	211 6,552	Woodstock 69 Franconia 3,212
Litchfield	291	Litchfield	291	
Livermore	25	Crawford Notch	5,950	Hart's Location 5,925
Loudon	52	Oak Hill Soucook	2 50	
Lyndeboro	14	Curtiss Dogwood	14	
Madison	17	Madison Boulder	17	
Marlow	628	Honey Brook	975	Acworth 203, Lempster 144
Mason	421	Kimball Russell Russell-Abbott	25 25 808	Greenville 4 Wilton 433
Milan	127	Milan Hill	127	
Milford	1	Federal Hill	1	
Moultonboro	325	Kona Farm Red Hill	315 10	
New Hampton	315	George Duncan Scribner-Fellows Sky Pond	100 140 119	Ashland 44
New Ipswich	97	Binney Pond Marshall	77 20	
Newbury	1,772	Mt. Sunapee Sunapee Lake	1,787 18	Goshen 33
Northfield	8	Ayers	50	Canterbury 42
Northwood	53	Woodman	141	Deerfield 88
Nottingham	1,325	Nottingham Pawtuckaway Smith Stevens	16 1,384 50 4	Deerfield 129
Orange	4,876	Cardigan Mt.	5,525	Alexandria 649

## TOWN AREAS OF STATE FORESTS AND PARKS

JUNE 30, 1960

Town	Total Acres of State Land in Town	Name of Reservation	Total Acres in each Reservation	Other Towns in which Reservation lies with area in each
Ossipee	187	Duncan Lake	100	
		F. Lord Pines	12	
		W. M. Lord	75	
Pelham	63	Jeremy Hill	63	
Peterborough	309	Casalis	230	Temple 4
		Miller Park	83	
Piermont	243	Sentinel Mt.	243	
Pittsburg	1,548	Connecticut Lakes	1,548	
Plainfield	113	Annie Duncan	113	
Portsmouth	6	Wentworth-Coolidge	6	
Randolph	3	Randolph Springs	3	
Rindge	1,169	Annett	1,360	Jaffrey 1, Sharon 190
Rumney	5	Baker	5	
Rye	161	Rye Harbor	160	
		Wallis Sands	1	
Salisbury	827	Kearsarge Mt.	2,918	Andover 212, Warner 1,743, Wilmot 588 Boscawen 435
		N.H. Forest Nursery	887	
Sharon	190	Annett	1,360	Jaffrey 1, Rindge 1,169
Shelburne	210	Lead Mine	202	
		F. A. Gardner	8	
South Hampton	48	Powow River	48	
Stewartstown	1,135	Coleman	1,135	
Stoddard	5	Pitcher Mt.	5	
Sutton	86	Shadow Hill	34	
		Wadleigh	52	
Tamworth	2,617	Bowditch-Runnells	56	
		Hemenway	1,958	
		White Lake	603	
Temple	4	Miller Park	83	Peterborough 79

## TOWN AREAS OF STATE FORESTS AND PARKS

JUNE 30, 1960

Town	Total Acres of State Land in Town	Name of Reservation	Total Acres in each Reservation	Other Towns in which Reservation lies with area in each
Warner	2,318	Carroll	29	
		Davisville	32	
		Harriman-Chandler	395	
		Kearsarge Mt.	2,918	Andover 212, Salisbury 375, Wilmot 588
		Toll Gate	119	
Washington	3,295	Pillsbury	3,702	Goshen 407
Weare	489	Clough	100	
		Vincent	636	Deering 239, Henniker 8
Wentworth	3	Plummer's Ledge	3	
Westmoreland	20	Hyland Hill	20	
Wilmot	588	Kearsarge Mt.	2,918	Andover 212, Salisbury 375, Warner 1,743
Wilton	433	Russell-Abbott	808	Mason 375
Wolfeboro	113	Gov. Wentworth Farm	96	
		Wentworth Beach	17	
Woodstock	69	Fay	211	Lincoln 142
Total acres	63,805			

## STATE FOREST MANAGEMENT

THEODORE NATTI, *Chief, State Lands and Forest Operations*

SARGENT GOODHUE, *Assistant Chief*

ALLEN E. GRASS, *District Forester*

CLAYTON N. HEATH, JR., *District Forester*

BRIAN K. SIMM, *District Forester*

Management of the timber resource of state-owned lands is an everchanging situation. It appears that a distinct trend is developing currently, that of lesser utilization of low grade timber products and accordingly a rapidly increasing use of chemicals to deaden low grade trees, especially weed hardwoods. Whether this change becomes permanent depends on the market, but with competition of other materials in the box industry, for instance, low quality white pine is moving slowly. Growing use of slabs, edgings, and other mill residues in making chips for the pulpwood industry is certainly curtailing thinnings, weedings, and other improvement cuttings. Therefore it appears that new markets for small size and low grade wood must be developed, and insistence on closer utilization in the sawlog market is necessary. Grading of sawlogs has definite possibilities. In those large areas of forest where desirable young growth is being held back by undesirable hardwoods, the use of chemicals is not only necessary but desirable. Wood has always had a universal use, and the answer to the problems of today is the cultivation of quality timber, a product which can meet any competition and make a profit for the forest owner.

A summary of forest operations on state lands for the period July 1, 1958 and June 30, 1960 follows:

*Bear Brook*—Harvest operations yielded the following volumes: 329,030 bd. ft. softwood sawlogs, 1,725 bd. ft. hardwood sawlogs, 12,595 bd. ft. mixed sawlogs, and 9.82 cords birch boltwood. Improvement operations including cleaning of harvested areas yielded 141.54 cords pine pulpwood, 27.54 cords hardwood pulpwood, and 1317 fence posts. An additional 430.09 cords of Grade I cordwood (split) and 96.78 cords Grade II cordwood (small round) were removed in weedings for sale to wood dealers and for charcoal-making at the Bear Brook kilns. In addition various improvement projects were completed and others initiated. A 67.5 acre area of well stocked young white pine was released, the overstory of weed hardwoods being treated with TRE-JEL (sodium arsenite). From first appearances, a very successful result was attained at contract cost of \$18.00 per acre. A good start in increasing white pine quality by pruning was made; about 40 acres were completed, 2,556 trees being pruned, representing 43,452 lineal feet. An extensive experimental planting of white pine was completed. About

50 acres of scrub oak (result of an old burn) were underplanted, and release by helicopter spraying with 2-4-5-T will be done during 1961. There are many thousands of acres of this type in New Hampshire and New England and the cost and results will be observed closely. A section of road totalling 2,500 feet was improved in the "Old Nursery" area. Plans were formulated for a rather extensive aerial spraying program for deadening weed hardwood during the summer of 1960. The charcoal kiln was in full scale operation during the summer periods. Increased state park use of charcoal was becoming apparent but not to the anticipated degree. Increased sales are necessary for profitable operation. A total of 115 acres was worked over in all operations.

*Cardigan*—A sizable harvest of mature and overmature hardwoods was completed. Full utilization of wood was not possible because of cull, large minimum diameters required for hardwood logs, fairly difficult logging terrain, and lack of markets for low grade wood, especially pulpwood. Volumes harvested by species were as follows: 190,175 bd. ft. yellow birch, 222,959 bd. ft. sugar maple, 145,740 bd. ft. beech and red maple, 9,772 bd. ft. birch and ash, and 2,300 bd. ft. spruce, totalling 570,946 bd. ft. Additional work is required in the rehabilitation of this neglected area, mainly the deadening of large cull hardwoods. A reasonable catch of hardwood reproduction is already evident. An area of 140 acres was covered in this operation.

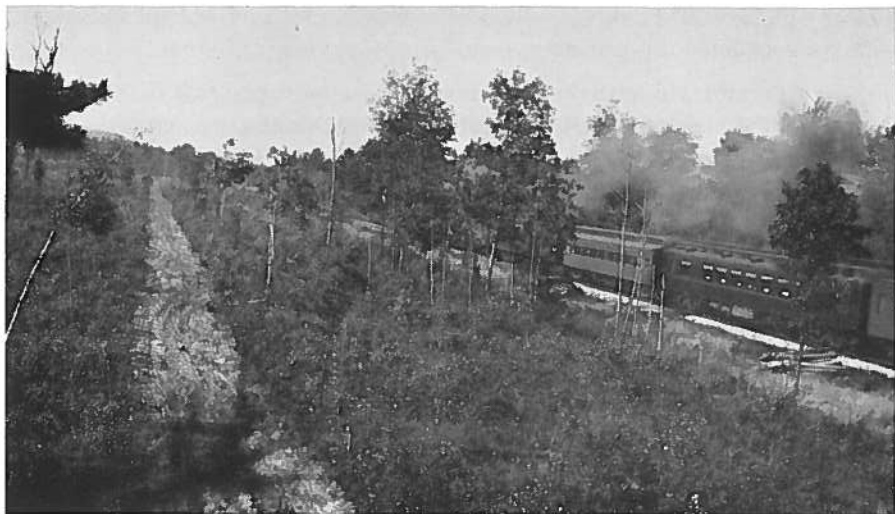
*Coleman*—Considerable work was done in planting open fields, much of which was done under the Soil Bank program. In 1959, 12,104 larch seedlings were planted on 17.8 acres, and 46,101 white spruce on 38.1 acres. Replanting was necessary over much of the larch area in 1960, in addition to other new plantings. In 1960, 17.8 acres of larch were replanted, and 16.6 acres were planted with 20,086 spruce acquired from the Vermont Forest Service. Because of the small stock, the success of this planting venture will be in doubt for some time. One more field remains to be planted. Boundary surveys are in progress at the present time.

*Connecticut Lakes*—Harvest of merchantable stands of spruce and fir continued, using group clearcut methods. The presence of areas of blowdown necessitated larger openings than desired in some cases. A total of 392.70 cords of pulpwood was cut on 40 acres. An additional volume of 15,250 bd. ft. of softwood logs from butts of large spruce and fir was harvested together with 55,260 bd. ft. of hardwood logs, utilized from scattered old growth trees.

*Cushman*—A ten-acre thinning yielded the following: 103.38 cords pine pulpwood, 1.35 cords hardwood pulpwood, and 12.19 cords spruce and fir pulpwood. Pruning of selected crop trees of white pine has been in progress and will continue until the thinned area has been completed.

*Forest Lake*—Approximately five acres were harvested, spruce being selectively cut and birch being cut to a diameter limit. The yield from this operation was 5,665 bd. ft. spruce, 20,095 bd. ft. of hardwood, mostly white birch, and





*Fire break on Mast Yard State Forest, 1915*



*Same view taken in 1958. Fire break is now a forest road, and pulpwood has been harvested from plantations.*

20.00 cords hardwood pulpwood. Road stabilization with water bars and seeding with rye completed this project.

*Fox Forest*—Minor activity in woods operations was evident during this biennium. This was mainly due to substantial inventories from previous years and in a large measure to a lack of qualified woods labor in the area. Prospects look brighter for the coming biennium. Harvest and improvement work yielded the following on about 13 acres: 2,110 bd. ft. mixed logs, .13 cords pine pulpwood, 48.40 cords hardwood pulpwood, 7.95 cords mixed pulpwood, and 25.97 cords Grade I cordwood. A sizable operation of chemical de-barking was conducted during 1959 when 9,255 trees representing more than 600 cords of peeled hardwood pulpwood were treated. Operation of this wood began early in 1960. This work was done on the recently acquired Harvey lands, for the purpose of releasing desirable softwood.

*Governor Wentworth*—Thinning of dense white pine plantations resulted in 72.18 cords pine pulpwood and 4.14 cords hardwood pulpwood. Approximately 10 acres were completed with additional acreage to be done. Crop tree pruning is scheduled for the future.

*Hemenway*—Several different projects resulted in a total stumpage sale of 360,678 bd. ft., most of which was white pine and hemlock, with a small mixture of hardwoods. These stumpage operations covered about 70 acres. In addition, several other projects produced the following products, sale being made at roadside or delivered to mill: 44.76 cords birch boltwood, 1.55 cords pine pulpwood, 190.15 cords hardwood pulpwood, and 2.30 cords spruce and fir pulpwood. The possibilities of rough hardwood pulpwood sales are better in the Tamworth area and further north than in central and southern New Hampshire and continued activity in this area is anticipated. Approximately a mile of road was reconstructed between the Great Hill Road and Wonalancet Road, so-called, requiring 9 culverts and 3 bridges. This road opened a fairly substantial volume of timber for harvest, marking of which is in progress at the present time. Approximate cost of the road work was \$1,000.00.

*Honey Brook*—Clearcutting of about two acres of Scotch pine yielded 31.63 cords pine pulpwood. The extremely low quality of Scotch pine in New Hampshire is difficult to understand. The growth is very good but the form is poor. We probably have enough other species to preclude the use of questionable species such as this. The cubic foot growth of wood per acre per year, however, does indicate the advisability of further experimentation.

*Kearsarge*—Utilization of spruce for piling has been more profitable than for any other use. An extremely fine selective cutting yielded 14,195 linear feet of spruce piling and 4.22 cords of pulpwood from 11 acres. The wind vulnerable residual stands of spruce are standing up well after thinnings and selective harvest cuts. Certainly the risk of windthrow must be assumed in the attempt to

bring smaller diametered spruce to merchantable piling size. Great quantities of reproduction are showing two years after harvest.

*Lead Mine*—Several years of harvest and improvement operations are gradually being terminated. Operations over 65 acres yielded a cut of 39,110 bd. ft. hardwood logs, 121.12 cords of boltwood, and 369.60 cords of hardwood pulpwood. Road stabilization has been done in some areas and more is necessary to prevent erosion on steep slopes.

*Mast Yard*—The recently acquired Eastman lot was clearcut for pitch pine preparatory to establishment of a new stand of white pine partly from natural regeneration and partly by fill-in planting. A yield of 6,515 bd. ft. of sawlogs, 240.42 cords of pine pulpwood and 307 guard rail posts was gained from 40 acres. Aerial spraying to control weed species, especially gray birch, will be necessary prior to or immediately after planting. The site quality is not high but good yields can be expected. A new bridge crossing Dolph Brook is necessary since high water and ice caused the existing bridge to be raised from its bed and dumped several hundred feet downstream. A more substantial structure is necessary but acquisition of privately owned land at the bridge site is desirable. Work is progressing on this at the present time.

*Merrimack River*—A ten-acre 6"-12" dbh white pine plantation of generally low form and quality, interspersed with good quality natural pine of diameters up to 20" dbh was thinned. Yield of quality sawlogs amounted to 16,625 bd. ft. of white pine. Close utilization of low quality trees yielded 25.38 cords of pine pulpwood, .57 cords hardwood pulpwood and 2.72 cords of Grade II cordwood.

*Nursery*—A winter logging program conducted during the off-season by the nursery crew yielded 74,090 bd. ft. white pine logs, 27.64 cords pine pulpwood, .61 cords Grade II cordwood and 661 red pine fence posts. The operating was done on a normal cost basis, the nursery being reimbursed for work performed. A similar arrangement may be continued during the next biennium depending on the amount of nursery maintenance work and on the timber market.

*Pillsbury*—Several harvest projects were completed and the chemical peeling and logging of poor hardwoods continued. A stumpage sale of 90,944 bd. ft. of white pine on Mad Road near the Draper line and an operated white pine log job on Mad Road were completed. A hardwood sawlog harvest adjacent to the recreation area was also made. Piling amounting to 10,828 linear feet of spruce also resulted from the pine sawlog jobs. The greatest activity centered around chemical peeling of poor hardwoods, and logging of previously treated trees. A total of 200.90 cords of peeled hardwood pulpwood was harvested, in addition to 16.85 cords Grade I cordwood and 9.82 cords Grade II cordwood. During 1959 a total of 56 acres was covered by a chemical peeling crew using sodium arsenite. An estimated 5,128 trees were treated representing a potential yield in 1961 of 340 cords of peeled pulpwood. The 1960 chemical peeling was done at

the Max Israel tract (part of Pillsbury State Forest). A total of 9,509 trees representing a potential yield of 760 cords of peeled hardwood was treated. This timber will be harvestable in 1962 since it has been found that a two year period is desirable for adequate bark peeling. Approximately 100 acres of desirable softwood and hardwood seedlings and small saplings were released in this project. A substantial volume of merchantable softwood and hardwood logs, mainly white pine and white birch, will add considerably to the wood volume and will make a fine operation in 1962. Some road work will be necessary.

*Pine River*—Planting of very difficult ground, mostly covered with low-bush blueberry, was accomplished at a cost of \$34.12 per acre. Site preparation with bulldozer and special blade resulted in a good catch of red pine. This experiment may lead to better methods of rejuvenating these extremely barren areas. A total of 8,000 trees was planted.

*Powow River*—Thinning of a 30-year old red pine plantation by removal of every 5th row and then removing about 20% of stems in between was started. Inexperienced woods labor caused poor results at the start of this job but an experienced crew is doing a fine job at the present time. The operation has been changed from a contract operated job to a stumpage sale. Approximately one acre has been completed to date resulting in the production of 383 posts and small poles.

*Rhododendron*—A harvest operation over 110 acres yielded a volume of 734,760 bd. ft. white pine logs, mostly of low quality due to large limbs and general roughness. Prior to marking this job, the entire area was zoned between high-use recreation and forestry, final approval being given by the Forestry and Recreation Commission. Approximately 80 acres were set aside for preservation, the remainder being managed for forest production. Due to the questionable nature of the old growth white pine a rather severe cut was made with the hope of catching natural regeneration from existing seed. Once the natural seeding has become established, spot planting may be necessary. Some good hardwoods exist on the area, especially red oak.

*Sentinel Mt.*—Thinning of 5 acres of white pine plantation approximately 30 years of age yielded 4,560 bd. ft. sawlogs, 29.41 cords pine pulpwood, and additional volume of 3.04 cords spruce and fir pulpwood. This operation is only partially completed. Pruning of selected trees will be done upon completion of the improvement cutting.

*Mt. Sunapee*—A timber harvest program in conjunction with clearing of new ski slopes was administered for the Recreation Division. Besides clearing timber from several acres of slope, considerable birch and spruce was selectively cut in adjacent areas. An assortment of timber products resulted: 58,550 bd. ft. birch logs, 41,670 bd. ft. spruce, 25,800 bd. ft. hemlock, 20,415 bd. ft. of other



*Pulpwood harvested on Mast Yard State Forest.*

hardwoods, 99.13 cords birch boltwood, 13.00 cords other hardwood boltwood, and 48.09 cords hardwood pulpwood. The job was done on a cost basis, net profits being used for slash disposal and site clearing by the Recreation Division.

### **Federal Flood Control Areas**

*Blackwater*—Approximately 100 acres were covered by harvest operations during the past biennium. In addition, about two miles of road were reconstructed, and improvements made on an old existing wagon road. This road work opened a very well-stocked area, with considerable merchantable timber. The following were harvested: 632,460 bd. ft. softwood logs, 72,815 bd. ft. mixed sawlogs, 233.40 cords pine pulpwood, 9.98 cords hardwood pulpwood, and 19.35 cords Grade II cordwood. During the early summer of 1959, 891 trees were treated with sodium arsenite for chemical peeling. This represents about 60 cords of peeled hardwood pulpwood. Operations are continuing in this same area. It is well to note that flooding of logged areas occurred during the spring of 1960 with no apparent movement of slash or wood.

*Franklin*—A 25-year license to manage the Franklin Flood Control Area of about 3500 acres has been arranged with the U. S. Army Corps of Engineers. Management activities will be started during the winter of 1960-61 on the same basis as Blackwater operations. Each unit will be administered separately at the insistence of the Corps of Engineers.

### **Other Management Activities**

Boundary survey and marking were concentrated on tracts where boundary problems existed. This work involved such things as running trial lines in an attempt to locate lost corners, and using all resources at hand to delineate true boundaries. This is very time-consuming and much remains to be done, especially at Cardigan State Forest. Progress was made in repainting old lines, this phase of the program being on a maintenance basis. Serious damage to roads and bridges was caused by the heavy rains during the fall of 1959 and spring of 1960. Reconstruction is progressing slowly, within the limit of funds and manpower.

The district forester plan is now in effect with management centers in Epsom, Hillsboro and Plymouth. A smooth functioning organization has developed, enabling a wider coverage of needed work. Theodore Natti studied German forest management methods during a two-month trip to Lower Saxony in Northern Germany. His experiences and observations have been related to many groups through the medium of colored slides and publications.

Land acquisition will be accelerated because of funds made available by the sale of the Clough and Everett tracts to the Corps of Engineers. It is hoped to replace these areas by acquisition of available land adjacent to other holdings.

## Reforestation

Planting on state lands, and other lands under the jurisdiction of the Forestry and Recreation Commission during the past two years was as follows:

Forest	Acreage	W. Pine	Red Pine	Spruce	Larch	Other	Total
Bear Brook .....	50	48,000**					48,000
Blackwater (Federal) ..	7	2,625	1,050		1,650	1,393	6,718
Coleman .....	72.5			66,187			66,187
(Soil Bank) .....	17.7 (replanted)				12,104*		12,104*
Pine River .....	12		8,000				8,000
Fox .....	11.7		2,088	1,980	2,008	995	7,071
<b>Totals .....</b>	<b>170.2</b>	<b>50,625</b>	<b>11,138</b>	<b>68,167</b>	<b>15,762</b>	<b>2,388</b>	<b>148,080</b>

\* Replanting of 17.7 acres of the Coleman tract was necessary because of complete mortality of larch from the 1959 planting.

\*\* In some cases, notably at Bear Brook and Coleman, the tally of planted trees did not agree with the number ordered because of extra trees in each bundle. The number planted is given in this table.

In addition to the above plantings, experimental plots of exotic species were set out in various parts of the state. These plantings were made in open fields, 25 trees of each species being planted at each location. The following species were used: Douglas fir, grand fir, Concolor fir, Colorado blue spruce, Shasta fir, Engelmann spruce, tulip poplar, and chestnut. Several varieties of one species were planted in some cases. The plantings were made at Blackwater, Bear Brook, Rye Harbor, Coleman, Pine River, Merrimack River, Hemenway, Franklin Pierce, Pillsbury and Toll Gate. Periodic observations will be made to determine the adaptability of these exotics to New Hampshire. The planting at Blackwater was also an experimental planting, using a number of species in a mixture. This practice is used quite commonly in German forests.

## TIMBER HARVEST FROM STATE LANDS—July 1, 1958 - June 30, 1960

Forest	Area Operated Acres	Type of Cutting	Sawlogs Bd. Ft.	Birch Bolts Cds.	Pine	PULPWOOD Hdw. Cds.	Sp. & Fir	Grade I Cordwood Cds.	Grade II Cordwood Cds.	Posts Pieces	Poles & Piling Lin. Ft.
Bear Brook	115	Harvest Improvement	392,030 sft 1,725 hwd 12,595 mixed	9.82	141.54	27.24		430.09	96.78	1,317	
Cardigan	140	Harvest	* 570,946 hwd				392.70				
Connecticut Lakes	40	Harvest	* 55,360 hwd								
Cushman	10	Thinning	* 15,250 sft		103.38						
Forest Lake	5	Harvest	* 5,665 sft			1.35					
Fox Forest	11	Improvement	* 20,095 hwd			20.00					
Gov. Wentworth	10	Thinning	* 2,110 mixed		.13	56.35**		25.97			
Hemenway	100	Harvest	* 360,678 sft	44.76	1.55	190.15	2.30				
Honey Brook	2	Improvement			31.63						
Kearsarge	11	Weeding									14,195
Lead Mine	65	Harvest	* 39,110 hwd	121.12		369.60	4.22				
Mast Yard	40	Improvement	* 6,515 sft		240.42						
Merrimack River	10	Improvement	* 16,625 sft		25.38	.57			2.72	307	
Nursery	10	Harvest	* 74,090 sft		27.64				.61	661	
Pillsbury	70	Harvest	* 174,975 sft			200.90		16.85	9.82		10,828
Powow River	1	Improvement	* 57,740 hwd								
Rhododendron	110	Thinning	* 734,760 sft		29.41		3.04			383	
Sentinel Ml.	5	Harvest	* 4,560 sft								
TOTALS	755		1,722,150 sft 744,880 hwd 14,705 mixed	175.70	673.26	870.30	414.45	472.91	109.93	2,668	25,053
Blackwater	100	Harvest	1,481,735 Total 632,460 sft 75 hwd 72,740 mixed		228.62	14.78			19.35		
			705,275 Total								

\* Stumpage.

\*\* 7.95 cds. mixed pulpwood included.



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**COST AND INCOME FROM WOODS OPERATIONS**


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Fiscal Years 1959 and 1960

Forest	Operating Cost	Gross Income	Net Income
Administration .....	\$176.90	\$741.36	\$564.46
Bear Brook .....	20,565.89	26,022.11	5,456.22
Cardigan .....		14,713.91	14,713.91
Coleman .....	1,698.96	1,249.28	— 449.68
Connecticut Lakes .....	6,990.79	10,549.58	3,558.79
Contoocook .....	159.46	551.76	392.30
Cushman .....	1,940.29	1,939.44	— .85
Duncan Lake .....	173.66	429.89	256.23
Forest Lake .....		867.98	867.98
Fox Forest .....	2,374.20	5,000.58	2,626.38
Gov. Wentworth .....	1,558.75	2,012.33	453.58
Hemenway .....	6,164.59	16,989.98	10,825.39
Honey Brook .....	511.68	959.60	447.92
Kearsarge .....	60.35	3,025.14	2,964.79
Kingston .....		9.00	9.00
Lead Mine .....	3,511.83	10,502.36	6,990.53
Livermore Falls .....		100.00	100.00
Mast Yard .....	4,009.45	5,763.43	1,753.98
Max Israel (Pillsbury) .....	10.00		— 10.00
Meadow Pond .....	45.80	145.46	99.66
Merrimack River .....	1,240.45	3,268.28	2,027.83
Nursery .....	2,286.89	4,004.71	1,717.82
Pawtuckaway .....	133.76	429.76	296.00
Pillsbury .....	6,541.95	15,137.22	8,595.27
Powow River .....	41.06		— 41.06
Rhododendron .....		8,817.12	8,817.12
Sentinel Mt. ....	480.16	530.67	50.51
Shaker .....		551.34	551.34
Woodman .....	132.00	339.95	207.85
<b>Totals .....</b>	<b>\$60,808.87</b>	<b>\$134,652.14</b>	<b>\$73,843.27</b>
<b>Blackwater .....</b>	<b>\$21,687.13</b>	<b>\$38,129.96</b>	<b>\$16,442.83</b>

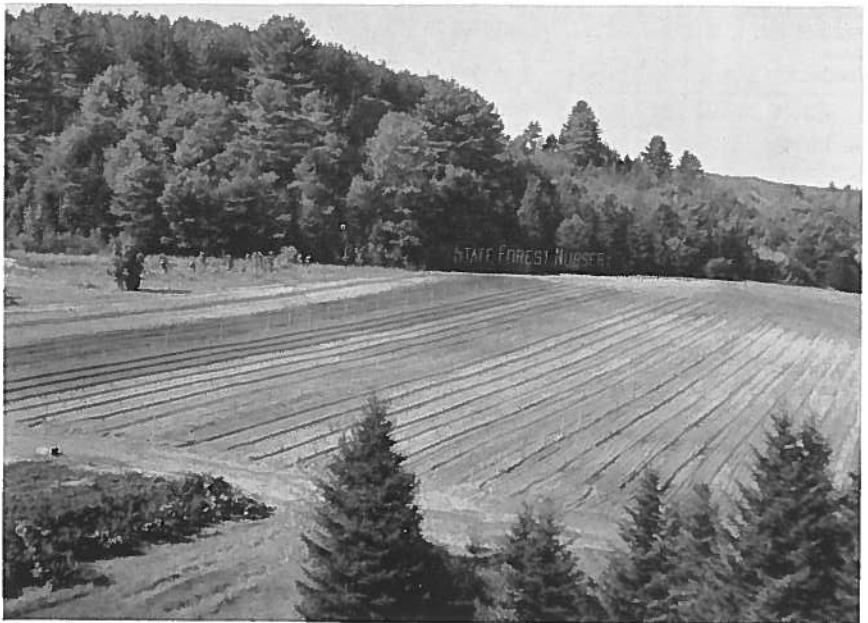
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*Preparing seedbeds, State Forest Nursery.*



*Lower area, State Forest Nursery.*

## STATE FOREST NURSERY

C. INGERSOLL ARNOLD, *Chief, State Forest Nursery*

Streamlining of nursery operations started in 1958 was continued to increase the efficiency in raising the required number of trees of the best possible quality.

### Equipment

Little new equipment was purchased or made in addition to that mentioned in the last biennial report. Some existing equipment was altered to reduce manual labor. Specifically, a hydraulic lift and power take-off were installed on the OC-6 Oliver track-laying tractor, and power steering was fitted on the Allis Chalmers tractor so that it could be steered when the bucket loader was loaded with heavy material. The old worn-out Oliver tractor was traded in for a new International 340 Utility tractor, which is much appreciated by the nursery personnel. Another sorting table and two more packaging machines were constructed by the nursery personnel in the winter of 1959. A second door was cut into the cold storage room to facilitate loading tree delivery trucks. The temporary irrigation system in the upper area was removed in 1959 and a permanent type installed, and in 1960 a similar system was placed in the lower area along Route 3. The two pumps, one on Stirrup Iron Brook, the other on the irrigation pond, were connected so that one could be used to supplement the other—both can pump directly into irrigation lines or into the storage tank on the hill. Minor equipment additions included a chain link drag, a spring tooth drag, a cultivator, and a cement mixer (used for treating seed with bird and rodent repellent).

Most of the nursery producing area is located on a high plateau west of the headquarters area. The road to the area was so steep and shaded that it was impossible to get up into the area in the spring as early as desired because ice and snow made this impossible. A new road was cut to the upper area at nominal cost enabling the nursery crew to start lifting as soon as frost has left the ground.

### Soil Fertility Maintenance

Certain areas of the nursery were badly depleted of soil nutrients. These areas could not be rebuilt with fertilizer and cover crops because they had to be continually growing trees, there not being sufficient space to permit crop rotation. The advent of the Conservation Reserve Program (Soil Bank) made area expansion necessary and it supplied the funds necessary to do the job. Eight acres were cleared and made ready for seeding in 1956. This made it possible to rebuild the soil in the area along the highway (Area A.) This area had three crops of Balboa Rye, a crop of oats and a crop of corn, all plowed under long before maturity; two dressings of manure, a large quantity of commercial fertilizer

with each crop, and 500 pounds 45% ammonium nitrate per acre when each crop was plowed under to hasten decomposition. The most recent soil test showed fertility good to excellent in the three basic minerals. This area will be seeded in the fall of 1960. Space permitting, after a crop of trees is harvested, each area will be allowed to rest; be rebuilt by organic and commercial fertilizers and cover crops. The Balboa Rye cover crops are allowed to grow until the seed heads have formed at which time the rye is cut, conditioned, dried and baled to provide weed-seed-free straw for mulching purposes. Three-fourths of the value of rye cover crop is in the root and stubble, and it is felt that the benefits of such harvesting outweigh the amount of nutrients lost, inasmuch as salt marsh hay (the only other available weed-free mulch) costs \$25.00 per ton FOB plant.

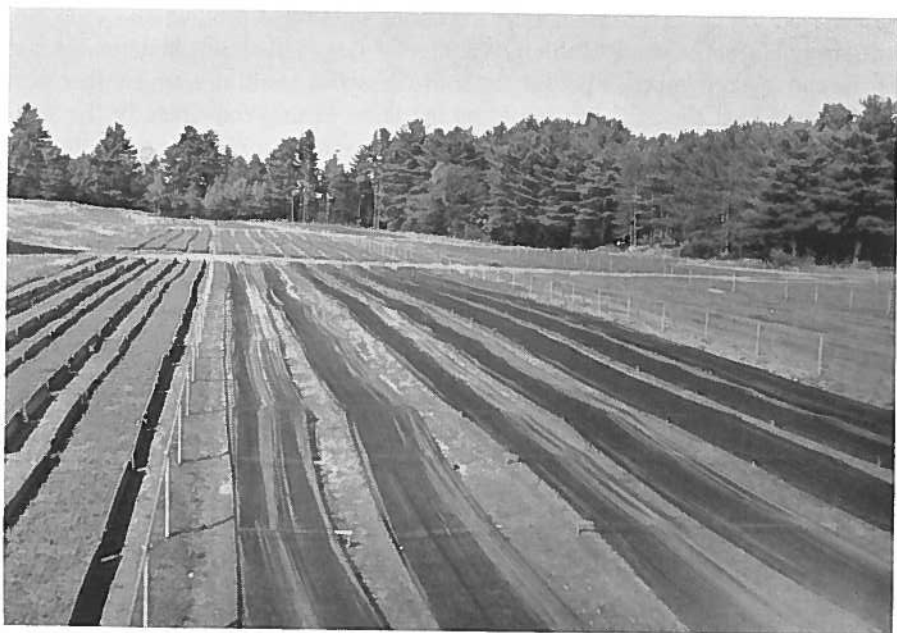
### Seed Treatment

Birds and rodents have always plagued nurserymen. Doves in particular are a problem at seed germinating time, and the shot gun method of treatment is not only senseless but ineffective. After almost a complete loss of the white pine crop in the spring of 1958, a program of seed treatment was inaugurated. Just prior to fall seeding, all seed was treated with sublimed Anthriquinone and Endrin, using Dow Latex as a sticker. Anthriquinone is non-toxic to birds but they do not eat seed treated with it. Endrin is a poison used to control rodents. Since using these chemicals no bird damage to germinating seed has been observed in the nursery. Apparently Anthriquinone repels birds through color (yellow) and/or smell so that birds do not attempt to eat the seeds and therefore are not killed by the Endrin. Seed is put in the cement mixer, sticker added, then the chemicals, and after about 20 revolutions, the lot is dumped and spread on screens to dry in the sun. With seed costing up to \$18.00 per pound, the small cost of treatment is good insurance.

### Research Projects

Two research projects were started in the fall of 1957 (see Biennial Report 1957-1958). With costs of labor on the increase it was necessary to find substitutes for the high cost of manual weeding, so that despite the need for increased production, the cost of temporary labor can be maintained at its present level or even reduced. The preliminary results of the experiments in chemical weed control were so successful on a small scale that several were tried on a larger scale in 1958. The results evidenced by reduced man hours needed to pull weeds warranted continued use of four of these chemicals.

A western conifer experiment was instituted in the fall of 1957. The species planted were those that were believed promising for quality Christmas tree stock. The purpose was to grow enough trees for experimental out-planting on state lands so that those that were able to withstand severe winters and late spring frosts could be discovered. The small quantities of seed germinated far beyond expectations. So far, most of the species are doing exceptionally well, although it was observed that some of the douglas fir started new growth too early and



*Saran shade screening, State Forest Nursery.*

grew too late in the fall, making it subject to late spring and early fall frosts which killed new, succulent growth. A few years in the field will give us a better picture of the possibility of these trees. Without doubt many make a better quality Christmas tree than our native species. What we do not know, however, is whether, since they are so far removed from their natural range, they will be subject to insect or disease attack or suffer severely from climatic causes. Eventually we should be able to publish a bulletin which would serve as a guide to Christmas tree growers and commercial nurserymen as to what species and strains and from what elevations and regions their stock should originate.

### **Conservation Reserve Program (Soil Bank)**

This program is financed entirely by the Federal Government. Our original contract was to supply  $2\frac{1}{2}$  million trees, which was completed by 1959. Unfortunately we had a surplus of some species and a deficit in balsam fir. While the trees were available, it was impossible to get them all planted, necessitating shipment of the surplus to other states. Two balsam fir crop failures (one in 1959 caused by late frost in an area where it was impossible to sprinkle because the irrigation system was not set up, another in 1960 where the seed did not

measure up to claims by the supplier) set back balsam fir production. As in any nursery operation, a considerable percentage of trees fail to reach shippable size at the end of their rotation period; to hold the entire planting over another year would mean that the majority would be too large to ship conveniently. In order to eliminate throwing away the potential planting stock, a Holland transplanting machine was obtained on loan from the U. S. Forest Service with which two men could transplant 20,000-30,000 trees per day. These transplanted trees normally grow to shippable size in one growing season. Usually out of 1,000,000 trees in the seed beds, 200,000 are too small to ship, which if transplanted can be grown at a cost of from \$5.00 to \$7.00 per M. This is preferable to throwing the trees away.

### **Tree Storage**

The nursery has a cold storage room which is primarily used for storing trees in the spring during shipping season until all the trees for one county are ready for delivery. Unfortunately, two counties, Rockingham and Hillsborough, are usually ready for planting before the frost has left the nursery beds. Storage over winter has been tried for several years, using different techniques on a small scale. One method was found which worked fairly well, but when tried on a large scale resulted in failure, due in large part to grey mold. While pines seem to store successfully, spruces and firs do not. Until control methods are found for grey mold and until techniques are developed to guarantee successful storage of fir and spruce, we will probably discontinue storage trials, at least until we can afford to sacrifice some of these high demand species, which at this time we cannot.

### **Seed Storage**

Seed is stored in a walk-in freezer at a temperature of 0° to 10° F. Such storage resulted in increased germinative energy for almost all species. Red and white pine in particular benefited most by such storage. The seed moisture content was reduced to 8% or less before storage and the seed stored in sealed air tight containers. Samples of all seeds are tested at the Fox State Forest every year and records of each are kept. It is interesting to note that some red pine seed increased from around 55% germination in 1957 to 95% in 1960. One lot of seed recently tested 99% in 10 days. By sowing seed in the fall it is not necessary to stratify it.

## NURSERY OUTPUT

Age of Stock	White Pine	Red Pine	White Spruce	Fall, 1958 — Spring, 1959		Larch	Ash	Birch Chestnut	Western Conifers	Total
				Balsam Fir						
4 year				38,100						38,100
3 year	184,250	422,700	416,250	134,700	64,900	4,309	1,934			1,229,043
2 year	140,155	296,406	2,246,320							2,682,881
Soil Bank	324,405	719,106	2,662,570	172,800	64,900	4,309	1,934			3,950,024
	105,500	233,000	1,653,400	20,000	43,600					2,055,500
Total	429,905	952,106	4,315,970	192,800	108,500	4,309	1,934			6,005,524
<b>Fall, 1959 — Spring, 1960</b>										
3 year	208,000	392,528	575,850	814,900	43,600	5,229	918	200	11,000	2,052,225
Soil Bank	23,500	57,200	300,100	560,100	31,500					972,400
Total	231,500	449,728	875,950	1,375,000	75,100	5,229	918	200	11,000	3,024,625

VALUE OF NURSERY STOCK PRODUCED

Fiscal Year	1959	1960
Trees sold to private planters .....	\$26,270.05	\$18,104.76
Trees given to 4-H and other juvenile clubs .....	787.33	855.00
Trees given to towns and cities .....	94.50	570.00
Trees used on state lands .....	475.37	953.50
Trees for Arbor Day planting program .....	22.93	38.99
Trees for Soil Bank planting program .....	14,388.50	9,724.00
	\$42,038.68	\$30,246.25



Photo Fred Beane, Manchester, N.H.

*Holland transplanting machine in operation.*



**FREE DISTRIBUTION OF PLANTING STOCK**

Fiscal Years 1958-59 and 1959-60  
(Number of Trees)

<u>Agricultural High Schools and Other Schools</u>		<u>Arbor Day</u>	
Alstead, Vilas High .....	1,800	Boy Scouts, Fish & Game Clubs, Women's Clubs, Garden Clubs, Granges and Patriotic Organizations .....	18,974
Contoocook, Hopkinton High .....	3,000		
Conway, Kennett High .....	7,000		
Derry, Pinkerton Academy .....	11,200		
Dover, Dover High .....	3,200		
Hudson, Alvirne High .....	500		
Lebanon, Lebanon High .....	2,100		
Meredith, Interlakes High .....	500		
New Boston, New Boston High .....	8,050		
Newport, Newport Jr. High .....	800		
Orford, Orford High .....	11,100		
Rochester, Spaulding High .....	6,300		
Tilton, Spaulding Youth Center .....	1,000		
Tilton, Tilton-Northfield High .....	5,300		
Walpole, Walpole High .....	1,500		
Strafford, Strafford School Dist. ..	500		
Weare, Weare High .....	2,000		
<u>Total (17 schools) .....</u>	<u>65,850</u>		
<u>County 4-H Clubs</u>			
Belknap .....	5,250		
Cheshire .....	14,450		
Coos .....	11,550		
Grafton .....	4,800		
Hillsborough .....	4,500		
Merrimack .....	20,725		
Rockingham .....	40,150		
Strafford .....	14,300		
Sullivan .....	3,600		
<u>Total (439 members) .....</u>	<u>119,325</u>		
		<u>State Agencies</u>	
		Fish & Game Department .....	2,000
		State Prison .....	11,000
		Laconia State School .....	500
		University of N.H.—Durham .....	1,750
		State Forests .....	144,010
		<u>Total .....</u>	<u>159,260</u>
		<u>Federal Agency</u>	
		Blackwater Dam .....	4,000
		<u>Cities and Towns</u>	
		Laconia .....	2,000
		Walpole .....	500
		Concord .....	10,000
		Claremont .....	1,000
		Winchester .....	2,000
		Nashua .....	2,000
		Manchester .....	13,000
		Bath .....	40,000
		Strafford County Farm, Dover .....	2,000
		<u>Total .....</u>	<u>72,500</u>
		<u>Grand Total .....</u>	<u>439,909</u>

## WHITE MOUNTAIN NATIONAL FOREST

GERALD S. WHEELER, *Supervisor*

Multiple use and sustained yield are the two basic principles that have guided the management of the national forests since their beginnings. The White Mountain National Forest, along with the 150 other national forests in the United States, is administered for the continued and balanced production of timber, recreation, watersheds, and habitats for fish and game. Each of these resources receives equal consideration in determining the best combination of uses to meet the public needs. The ultimate goal of multiple use management is to manage each acre so as to produce the maximum returns to the public. This management has continued to pay dividends on the White Mountain National Forest in the form of increased receipts from sale of stumpage and from other land uses, improved timber stands, improved fish and game habitat, expanded recreation opportunities, increased and improved road and trail mileage, and continuous supplies of pure water.

The timber cut from the White Mountain National Forest during the past two years amounted to 38 million board feet, with receipts from this and special land uses amounting to \$529,000 for the period. The towns in which national forest lands are located shared 25 percent of this amount, which was returned to them in lieu of taxes, and New Hampshire towns also received the revenue from the timber tax for all stumpage cut from national forest lands within their boundaries. The production of timber on the White Mountain National Forest is correlated with other activities to fulfill the multiple use concept. Timber stands are managed to provide an increasing supply of wood products for use by local industries and to produce a maximum volume of high-quality timber. Mature and overmature timber is harvested by methods that complement other uses. Cutting practices on timber sale areas are modified to improve the habitat for wildlife through judicious cutting to protect deer yards and create optimum food supplies for deer as well as food and cover for small game. Stream, trail, and roadside zones are protected to enhance the recreation qualities and to insure protection of water supplies and fishing streams. Practices such as removal of cull trees, weeding and thinning of young timber, and occasional underplantings, are carried out on all sale areas to improve the future crop of timber.

A complete inventory of timber volumes and growth rates on the forest was started in 1959 and will be completed next year. Data obtained will be used in preparation of new timber management plans which will specify the annual volume that can be cut on a sustained basis.

The flood of October 1959 caused extensive damage to roads, trails, stream

banks, and recreation improvements. Much of this damage has been repaired and several projects are still underway.

Recreation use continues to increase and during the past two years several new developments were made available to help meet the growing need for recreation sites. New areas included the Crocker Pond Camp Ground in Maine, Covered Bridge Camp Ground in Passaconaway Valley, Waterville Camp Ground in Waterville, South Pond Recreation Area in Stark, and a picnic site and two over-looks on the Kancamagus Highway. Extensive improvements were made to the Zealand Camp Ground and the Sugar Loaf Camp Ground has been enlarged. Construction of a new 58-unit camp ground at Campton is now in progress and surveys are being made for a new recreation area at Russell Pond in Woodstock. The 5,400-acre Great Gulf Area was formally classified as a "wild area" by the Forest Service in 1959. This classification provides for preservation of the primeval environment by prohibiting commercial use and occupancy of the area.

Search and rescue of lost or injured persons continued to be an important service and new plans for coordinating the efforts of all interested and responsible agencies were developed and put into operation.

The Kancamagus Highway was opened for through traffic from Conway to Lincoln in August 1959 and received very heavy use. Improvement work is still in progress and most of the highway should be paved within the next two or three years. Sections of the Wild River and Zealand Roads were relocated and constructed this year, the Slippery Brook and Bog Dam Roads were resurfaced with gravel and construction of 2.7 miles of road to Russell Pond is now under way. A 180-foot suspension bridge was recently completed on the Wilderness Trail in the East Branch of the Pemigewasset Valley and extensive repairs were carried out on the Tuckerman Ravine and Piper Trails.

Fire occurrence on the forest during the past two years was light. Only one man-caused fire and two lightning fires occurred during this period. This excellent record is a tribute to the cooperation of all users and visitors of the forest. A new high-band radio network, with automatic repeaters on Mt. Washington and Cannon Mountain, is now in operation. A regular aerial detection patrol is now used in the Pemigewasset and Waterville Valleys and complete aerial caches of fire tools are stocked for dropping from aircraft to ground crews in inaccessible areas.

Cooperative wildlife management projects with the New Hampshire Fish and Game Department are being carried out this year, and the Fishery Management Biologist from the Bureau of Sport Fisheries and Wildlife has completed surveys of 27 lakes and ponds to determine the management practices necessary to improve the quality of fishing.

Changes in personnel during the past two years involved the assignment of Elmer G. Kelso as Staff Assistant and Raymond Powell, John Herrick, and Homer Morrison as Civil Engineers in Laconia; and employment of John Derby, Daniel Murphy, and Donald Church as foresters at Plymouth and Conway.



*Woodlot demonstration area.*

### **NEW HAMPSHIRE TIMBERLAND OWNERS' ASSOCIATION**

The history of this private forest fire protective association was fully reported in the 1955-56 Biennial Report (Pages 73-74). On June 29, 1960, the 50th Anniversary of the founding of the association was celebrated at a dinner in Jefferson. Mr. Edgar C. Hirst, first State Forester of New Hampshire, gave an address "Early Days of the Association" which was published in pamphlet form. Mr. Stewart H. Holbrook, the well-known author, himself a native of the Upper Connecticut Valley, followed with a humorous talk. The program of this meeting contained a detailed account of the history of the association, the activities of which are now closely coordinated with the state Forest Fire Service. The 25 member companies and individual owners represent 600,000 acres.

## THE NEW HAMPSHIRE COUNTY FORESTRY PROGRAM

K. E. BARRACLOUGH, *Extension Forester*

The approach to New Hampshire owners of small forest holdings over a period of years by the county foresters has been effective in helping to change the local public attitude toward forest management and in stimulating increasing numbers of individual owners to act in the improved management of their properties. In each of the ten counties a county forestry committee studies the forest problems with its county forester and advises him in the development of his yearly plan of work.

Whatever future forestry programs may be formulated in New Hampshire to bring about improved forest management on private properties, especially small holdings, the education of the individual forest owner needs to be the starting point. This is important in the kind of society in which we function.

A sound forestry education program such as is being carried on by the New Hampshire County Foresters aims to get the attention and hold the interest of the individual woodland owner. It then becomes essential to focus attention on problems relevant to his situation with the purpose of bringing about action. The final result, if the educational effort is successful, will be satisfaction on the part of the woodland owner.

This direct approach to the woodland owner is supplemented by the mass media approach such as publications, news articles, attractive posters, exhibits, and the spoken word over the radio, television, and at public gatherings. The mass media approach gets attention and stimulates interest but only to a limited degree does this approach stimulate confidence, action, and satisfaction on the part of the individual woodland owner.

The mass media approach to forestry education is ineffective unless ways and means are available to provide the individual forest owner with technical assistance and guidance in the actual management of his forest property. The owner or his representative must experience or at least comprehend the skills required in applying forest practices applicable to his woodlands and he needs to relate these practices to sensible alternative plans, one of which he is willing to accept in the management of his property.

The New Hampshire eight county foresters and two assistants each year give on-the-ground personal guidance and assistance to approximately two thousand woodland owners. The personal guidance and assistance given these owners in the growing, harvesting and the marketing of their trees enables them to make a start in helping themselves in the improved management of their properties.

New Hampshire is fortunate in having more consulting foresters than all the rest of New England put together. The New Hampshire county and consult-

ing foresters work closely together and complement each other's activities. Each year the county foresters refer up to one hundred and fifty individual forest owners to consultants.

The emphasis in the County Forestry Program has shifted in recent years from management of merchantable stands to management in immature stands. The government cost-sharing program known as the Agricultural Conservation Program gives financial assistance to forest owners who carry out recommended forest improvement practices such as weeding, pruning, and planting. During 1952, 636 acres of improvement work were done under the AC Program and in 1959, 4,708 acres were improved. The effect of this improvement as carried out in immature stands will result in greater yields and an improved quality of timber in future years. The Agricultural Conservation Program has been a great help in influencing forest owners to carry out the forest practices which will not bring returns to the owners except in the future.

While advances have been made in influencing New Hampshire forest owners to improve the level of forest management on their properties by the means of education with the individual woodland owners, we have no cause to be complacent. It is estimated that less than two thousand forest owners apply improved forest practices in the management of their properties during the course of a year. Nearly one-half of this number are owners who are applying improved forest practices for the first time. There are some forty thousand forest owners in New Hampshire. Of the four million acres of forest lands in private holdings, 59.1 percent consists of immature stands, pole timber, seedlings and saplings, and poorly stocked areas. Most of this immature forest needs treatment, such as weeding, thinning, and improvement cutting, if the quantity, quality, and kind of timber is to be available to meet New Hampshire requirements in the year 2000.

Thousands of acres of private forest land in the state are taken up with trees for which there are no markets or only limited outlets. The timber from trees that are used for lumber, pulpwood and other purposes, often does not give the best returns to the land owners, the operators, or the manufacturers, because of inefficient handling and merchandising. Increased emphasis needs to be placed upon the handling and marketing of forest products when they leave the stump and on through to the usable product.

A successful forestry education program, such as is being attempted in New Hampshire needs to be all-inclusive. The mass media approach to the problem must be properly balanced with method and result demonstration to groups and individuals, including personal guidance and assistance to individuals in the growing, harvesting, and the marketing of their trees.



*Close utilization—key to management of small woodlots.*

## CONSULTING FORESTERS

A number of professional foresters are engaged in private consulting work in New Hampshire. They are prepared to give anything from advice, expert testimony as witnesses, or special reports, to complete management service including sale of timber. They thus supplement the work of the county foresters, who are limited in the time and extent to which they can assist private owners. The Commission has maintained a list of private consultants for many years for the use of county foresters and for forest owners who wish to engage consultants to assist them in forest management. It is revised annually and contains names of consulting foresters and firms known to be available for work in New Hampshire. The names of those engaged chiefly or solely in land surveying and appraisal are omitted. No claim is made that the list is complete, nor does the inclusion or omission of any name imply any reflection on qualification; the Commission makes no recommendation, nor does it assume any responsibility for work done. Out-of-state consultants are listed by request only. All addresses are New Hampshire unless otherwise specified. The following are presently listed:

Boomer, Stephen H.	Center Ossipee	LEnox 9-4588
Breckenridge, Walter F.	RFD 2, Claremont	Claremont 615-J
Brown, J. Willcox	Rm. 215, 77 N. Main St., Concord	CApitol 4-4751
Bruns, Paul E.	Box 44, Durham	UNiversity 8-2492
Burrage, Charles D.	Monadnock State Park, Jaffrey	KEystone 2-8862
Calhoun, John C., Jr.	Gilsum (Keene)	ELmwood 2-2865
Carpenter, Eugene	Boscawen	
Catheron, Allison	(See Wagner Woodlands)	
Chardon, J. Alain	Hopkinton Rd., Contoocook	PIioneer 6-3737
Christie, Aldis, Jr.	Auburn (Candia)	IVanhoe 3-4366
Day, Gordon M.	Pine St., Contoocook	PIioneer 6-3431
Dussault, Wm. E.	Stoddard (Marlow)	HILLtop 6-3483
Dwinell, Fred E.	7 King St., Barre, Vt.	Barre 2264
Dwyer, Walter, Jr.	Briar Hill Rd., Hopkinton (Contoocook)	PIioneer 6-3539
Feuer, Martin	Atkinson (Plaistow)	EVergreen 2-8482
Hall, Samuel G.	Plymouth	Plymouth 450
Hambrook, Francis G.	RFD, Center Harbor	BUTler 4-6876
Hicks, Halsey M.	Tyler Hill Rd., Brattleboro, Vt.	ALpine 4-2357
House, William P.	Chesham, RFD, Marlboro (Harrisville)	VAndyke 7-3262
Hunt, Fred M.	Athol Rd., Petersham, Mass.	RAYmond 4-3243
Johnson, Richard B.	RFD, Center Harbor	BUTler 4-6675
King, H. Thorn	Hancock	Hancock 20-11
Kraemer, J. Hugo	249 Lark St., Albany 10, N. Y.	Albany 4-4268
Kuss, Frederick	RFD 4, Laconia (Gilford)	LAKeside 4-0910
LaBree, Clifton	RFD, Wilson Hill, New Boston	TRinity 4-2780
Lane, William N.	Crown Point Rd., Rochester	Roch. 1403-W2
Marshall, Raymond H.	5 Pine St., Littleton	Littleton 4-2861
Morrill, George W., Jr.	RFD 3, Concord	CApitol 4-0163

N. E. Forestry Foundation, Inc., 41 Mt. Vernon St., Boston 8, Mass.

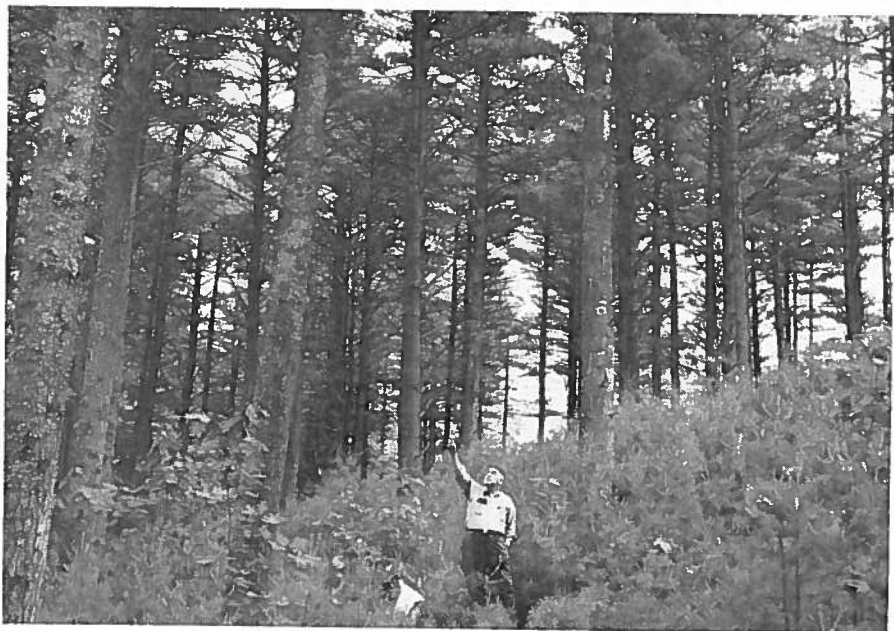
Representatives in N. H.:

Attridge, J. Milton	Antrim	Antrim 108
Coville, Stanley B.	Tamworth	FAirview 3-7747
Keller, John C.	RFD 3, Littleton	Bethlehem 163-K
Plumb, Allan W.	PO Box 206, Newport	Newport 446-J
Poppema, Donald R.	RFD 1, Center Barnstead	SPring 6-3643
Knickerbocker, Gerald	Box 55, Brattleboro, Vt.	ALpine 4-9531



N. E. Forest Industries, Inc., 3 North State St., Concord, CApitol 5-5712

Bofinger, Paul O.	5 Thomas St., Concord	CApitol 4-4607
Eggleston, Robert M.	Lake Shore Drive, Laconia	LAKeside 4-1488
Koenig, Walter L.	3 North State St., Concord	CApitol 4-4401
Carpenter, Eugene	13 Palm St., Concord	CApitol 5-6549
Rich, J. Harry	Townsend, Mass.	Townsend 750
Smith, Herman L.	121 High St., Exeter	PResident 2-2734
Thorne, Thaddeus	Center Conway	HIckory 7-2291
Van Alstine, J. Neil	Stark Rd., Center Conway	HIckory 7-2866
Wagner Woodlands (Allison Catheron, Forester)	Lyme	PYramid 5-6843
Wallace, Oliver P.	9 Valentine Hill Rd., Durham	UNiversity 8-2449
Woodward, Howard T.	234 Main St., Berlin	Berlin 440



*Shelterwood cutting in white pine 80 years old.*

## REGISTERED ARBORISTS

Registration is required by law of all persons engaged in tree surgery, spraying or otherwise improving shade and orchard trees. Applicants for registration are required to pass examinations in the various kinds of work they plan to undertake. Thus one may be registered to spray orchard trees without being qualified for other tree work. Examinations may be taken at any time at the office of the State Forester. Award of registration certificates is made by a board consisting of the Commissioner of Agriculture, the State Entomologist and the State Forester. Section 1 of Revised Statutes Chap. 222 (Chap. 237 Revised Laws) excepts from the requirement for registration persons doing tree work within a town by a resident of that town. The intent is to permit a person to improve and protect trees on his own property and occasionally do similar work for his neighbors. A recent ruling on this section states that "It does not, . . . permit a person to carry on business as an arborist within town limits including advertising, soliciting business or contracting to do arborist work." All persons intending to do tree work as a regular occupation must therefore be registered. Formerly the requirement for registration included work on forest trees. This was eliminated by Chap. 73 enacted by the 1957 Session of the Legislature.

A list of registered arborists, showing the specialties for which each is certified may be obtained from the State Forester or State Entomologist. These specialties are shown on the certificate. No one should engage an arborist to do work without checking to be sure he is certified to do the type of work for which he is to be engaged. The 1960 list of registered arborists follows. Names of individuals and firms are listed alphabetically. Where the name of the firm and the individual representing that firm are the same, only one listing is given. The Examining Board takes no responsibility for the work of any arborists, nor can it recommend any individual or firm specifically over any other.

### Registered Arborists 1960

(Address New Hampshire except as otherwise noted)

- Abbott Brothers Tree Service (William F. Abbott), Wells, Maine.
- Air Service and Supply (Gordon E. Mack) Box 351, Portsmouth (Aerial spraying).
- Amalia Tree Surgeons, Inc. (Karl F. Amalia), Manchester, Mass.
- Barber Tree Service (Eugene L. Barber), Peterborough.
- Bartlett Tree Expert Co., Stamford, Conn. (Wilfrid Wheeler, Jr., 795 Memorial Drive, Cambridge, Mass.) (John W. Wholley, Birch Road, Exeter).
- Batchelder, Roscoe H., 14 Emerson Street, Plymouth.

- Belanger, Robert J., 15 Pearl Street, Wakefield, Mass.  
Billings, R. E. (See Lucas Tree Expert Co.)  
Brittain, Benjamin L. (See Davey Tree Expert Co.)  
Caldwell, Clarence T. (See Franklin Tree Expert Co.)  
Calnan, George W., City Forester, Summit, N. J.  
Chase, Ernest J., 686 Court Street, Keene.  
Clark, Leon H., Jr., 35 Pleasant Street, Tilton.  
Colprit, Ernest S., RFD 1, Dover.  
Conley Tree Surgeons (Ervin G. Conley), 145 Townsend Avenue, Boothbay Harbor, Me.  
Cook, William M., Box 94, Penacook.  
Corliss, John M., (See Green River Tree and Landscape Co. Inc.)  
Davey Tree Expert Co., Kent, Ohio (Benjamin L. Brittain, 3 Newbury Terrace, Newton Centre 59, Mass.)  
Edwards, Joseph J., 317 York Street, Hanover, Pa.  
Ekola, Walter M., Elm Street, Townsend, Mass.  
Exeter Tree Service, (Parenteau, Roland), RFD, Exeter.  
Flint, Edward O., Box 154, Westminster, Vt.  
Flint, George W., Jr., 21 Park Street, Keene.  
Forshaw, Frank E., III, 51 Canal Street, Port Jervis, N. Y.  
Franke, William A., 15 Shelley Road, Wellesley Hills 81, Mass.  
Franklin Tree Expert Co. (Clarence T. Caldwell), 318 Main Street, Greenfield, Mass.  
Frost, H. L. & Higgins Co. (Roy D. Keene), 20 Mill Street, Arlington, Mass.  
Gray, Herbert C., Jr. (See Twin State Tree Co.)  
Green River Tree & Landscape Co., Inc. (John M. Corliss), 42 Adams Road, Greenfield, Mass.  
Hatfield, Richard G., 75 Turnpike Street, Allenstown.  
Hevey, Hector, 4 West Street, Allenstown.  
Homo, Philip R., 22 Merrimack Street, Penacook.  
Keene, Roy D. (See Frost & Higgins Co.)  
Kezar, Tree & Landscape Co., Thomas F. (Thomas F. Kezar), 3 Tibbetts Avenue, Sanford, Me.  
Kezar, Thomas F., Jr., 56 Fletcher Street, Kennebunk, Me.  
Kimball, Edwin S., RFD 3, Plymouth.  
Kirby, Byron L. (See Ralston Tree Service).  
Kolb, Warren (See Rockingham Tree Service).  
Lakes Region Spray Service (Harold S. Sheffield), New Hampton.  
Laviolette, Laurence A. (See Monadnock Tree Service).  
Lucas, Tree Expert Co., John, (R. E. Billings), Box 965, Portland, Me.  
Madden, James E., 99 Pleasant Street, Manchester.  
Martin, Bradley G., 1133 South Street, Needham, Mass.  
McHugh, Francis X., 674 Lowell Street, Lynnfield Center, Mass.

- Meador, Robert W., 117 Madbury Road, Durham.
- Melendy, Harry F., Ball Hill Road, Milford.
- Monadnock Tree Service (Laurence A. Laviolette), Peterborough.
- Myers, Willard N. (See Rockingham Tree Service).
- Nehring Tree Service (William H. Nehring), New Durham.
- Osgood Arborists, Inc. (Clarence Osgood), Central Street, Middleton, Mass.
- Parenteau, Roland (See Exeter Tree Service).
- Peeke, Leslie A. (See Whittier Tree Service).
- Ralston Tree Service, Inc. (Byron L. Kirby), 43 Cornwall Street, Portsmouth.
- Recce, Thomas J., 7½ Depot Street, Concord.
- Retelle, Albert R., Reservation Road, Andover, Mass.
- Robbins, Lester W., Box 1005, Portsmouth.
- Rockingham Tree Service (Warren Kolb & Willard N. Myers), Atkinson.
- Rule, Paul F., Jr., RFD 2, Richmond.
- Sanborn, William M., Jr., 27 Belknap Street, Concord, Mass.
- Seeley, Joseph D., 6 Hilltop Road, East Providence, R. I.
- Shannon, W. Roland, Jr., Glen Crest, Milford, Pa.
- Smith, Alfred A., 156 Calef Road, Manchester.
- Stacy, Charles R. (See Veteran Tree Conservation Co.)
- Stalbird, Russell N., 1611 Richmond Road, Columbus 23, Ohio.
- Stearns Tree Service (Harold E. Stearns), Box 63, Shaker Road, East Concord.
- Stevens Tree Expert Co. (John P. Stevens), Alfred, Me.
- Stone, Oscar P., 1708 Dixwell Avenue, Hamden, Conn.
- Sylvester, Edward J., 74 Millett Road, Swampscott, Mass.
- Tamke, John B., 614 Main Street, Laconia.
- Tartalis, Robert L., 13 Grand Avenue, Nashua.
- Tasker, F. Bruce, RFD, Sanbornville.
- Thomas, David A., 1818 Grove Street, Greensboro, N. C.
- Tierney, John J., 184 North Street, Manchester.
- Tufts, Robert L., 20 Lincoln Street, Stoneham, Mass.
- Tuttle, W. F., Wolfeboro.
- Twin State Tree Co. (Herbert C. Gray, Jr.), Box 112, Lancaster.
- Vachon, Robert M., Meredith.
- Veteran Tree Conservation Co. (Charles R. Stacy), 11 Old Essex Road, Manchester, Mass.
- Walker Tree Expert Co. (James R. Walker), 8 Walnut Street, Concord.
- Watson, David B., RFD 1, Portsmouth (Newington).
- Welchans, William H., RFD 1, Warner.
- Whittier Tree Service (Leslie A. Peeke), 67 Monroe Street, Amesbury, Mass.
- Wholley, John W. (See Bartlett Tree Expert Co.)
- Wilson, Donald R., Box 85, West Acton, Mass.

## FOREST RESEARCH

HENRY I. BALDWIN, *Research Forester*

Forest investigations as a phase of the activities of the Commission are carried on with the support of the Fox Trust Fund for Forest Research, a private endowment, the income from which is paid to the State Treasurer for expenditure under the direction of the State Forester. This was a gift of the late Miss Caroline A. Fox of Arlington, Mass., donor of the Fox State Forest. The income from this fund first became available in 1933. Annual reports of the use of this fund are made to the trustee. Maintenance of an experiment station at Hillsboro, N. H., research in various aspects of forest science and forest management and demonstrations of forestry are the stated objectives for which the income from the fund is to be spent.

### Experiment Station

The buildings on the Fox State Forest have been adapted to use as offices, laboratory, and living quarters for the staff. A considerable library, consisting largely of pamphlets and periodicals has been accumulated, a museum for demonstration of various aspects of forestry developed in the large barn, and various tool and stock rooms constructed. A small herbarium contains specimens of all plants growing on the Fox Forest; there is a small tree nursery for growing experimental stock. Routine seed testing is carried out for the state nursery. Facilities for drying and extraction of small lots of tree seed are on the third floor of the barn. A pavilion houses parts of old sawmills.

### Research

Investigations include both fundamental studies of tree growth and applied research designed to be of assistance in managing public and private forests in the state. Field experiments are located both on the Fox Forest and on other state and some private lands. These are carried on by the station staff and by visiting Research Fellows who are usually in residence at the Fox State Forest during the summer only. This program was started in 1934 and has been very successful, both in accomplishing research of value to the state, making maximum use of facilities and forests, and in providing training opportunities for the holders of the fellowships. The extensive source of seed experiments have been especially exploited by these students. Further two PhD candidates, and U. S. Forest Service personnel, not working under Fox Fund grants, have utilized these plantations for their investigations. Results of experimental work have been published in scientific and technical journals, in bulletins of other institutions and in thirteen Fox Forest Bulletins and 80 mimeographed Fox Forest Notes. The research staff was increased in 1960 by the appointment of Mr. David A. Rock as Assistant Research Forester. The nature of investigations currently being pursued, and carried out in the past is indicated by the following:

## Current Research Projects

*Weeding young stands.* Cost and effectiveness of different methods. Permanent study plots have been established in white pine, spruce-fir and hardwood types.

*Thinning.* Effect on increment and yield. Plots are under study in both natural and planted stands of white pine, red pine, spruce and natural stands of various hardwoods.

*Pruning.* Extensive pruning of selected trees has been done on white pine and to some extent on ash and oak. Special studies are underway to determine the effect of pruning on form. Older pruned trees have been sawn into lumber.

*Spacing in red pine plantations.* Plots planted at six different spacings in 1934 include thinned and unthinned plots.

*Source of seed (provenance) investigations.* Many large plantations have been made of scotch pine, norway spruce, and European larch in cooperation with the International Union of Forest Research Organizations. A smaller number of origins is represented in similar field trials of white pine, red spruce, douglas fir, and concolor fir. These examples of the behavior of different sources in New Hampshire will become of increasing value as the plantations increase in age, and should give indications of the best seed sources for use in the state. They serve also as valuable reservoirs for breeding stock and for establishing seed orchards.

*Hybrid poplars.* Field trials of several hybrids are of especial interest since they are 25 years old.

*Hybrid chestnuts.* Three plots of hybrids supplied by the U. S. Dept. of Agriculture and the Connecticut Agricultural Experiment Station have been maintained and measured annually. Some trees have attained a height of 20 feet.

*Distribution of Jack Pine in N. H.* This native pine is probably the fastest growing pulpwood pine but is very rare, occurring in only three small areas. An ecological study has been made of the sites where it occurs.

*Plantation Survey.* The purpose is to determine survival and growth of various species planted in N. H. during the past 50 years.

*Terminal forking in white pine.* A beginning has been made in studying the unexplained forking of terminal shoots of white pine not caused by weevil or birds and animals. Surveys have been made to determine the extent of this injury that results in deformity of pines as serious as that caused by the white pine weevil.

*Root rot caused by *Fomes annosus*.* This potentially serious disease of many trees, especially planted conifers, was the subject of an investigation by

Mr. Orson K. Miller, Jr., Research Fellow in 1959. A survey of the extent of the disease in the state was published. Several field experiments on the Fox and Honey Brook State Forests are under observation; in addition a cooperative study by the U. S. Forest Service utilizes the spacing plots of red pine at the Fox State Forest.

*Direct seeding.* Sowing tree seed directly in the field in place of planting seedlings raised in the nursery has been tried repeatedly for many years with disappointing results. Suppression of seedlings by hardwood leaves and competing vegetation appears to be a major cause of failure.

*Annual cut of forest products.* A census of the cut of lumber, pulpwood and other products is conducted annually, as required by law, by obtaining reports from consuming mills. Tabulation of the stumpage cut reported to the Tax Commission has been made for purposes of comparison.

*Natural areas.* Considerable attention was devoted in recent years to the need for preserving samples of undisturbed forest types, especially virgin areas. A compilation of all forest types in the state and representation of each in preserved areas was made.



*Source of seed experiment with Douglas fir. Extreme left seed from New Mexico; foreground Montana; open area at left Washington; upper center Idaho. Trees from New Mexico seed grew twice as fast as those from Washington. Fox State Forest.*

*Control of white pine blister rust by antibiotics.* Infected trees and healthy controls were treated with an antibiotic by two methods. Observations on the condition of trees are continuing.

*Returns from woodlot management.* Case histories of small woodlands that have been managed for many years and records kept will be collected and analyzed.

*Tests of exotic trees.* A considerable number of species were planted in the past to test their adaptability to New Hampshire conditions. Most of these failed to be hardy, or made such slow growth as to be of no importance except for decorative planting. Tests are being continued with species that offer hope of growing well here, and have specially desirable characteristics.

### Completed or Discontinued Projects

A large number of investigations have been carried on under the Fox Fund, some of which were the following:

Pine needle blight	Surveys of wood-using industries and markets
Beech scale control	Chemical debarking methods and materials
Interception of snow by forests	Pales weevil control
Forest fires and weather conditions	White pine weevil control
Cold storage of nursery stock	Protecting logs from borer attack
Indicator plants of white pine sites	Transplanting wildlings v.s. nursery stock
Christmas tree regeneration from cut stumps	Weeding by foliar and basal spray
Seeding logging roads	Hemlock looper survey
Logging damage to reproduction	European spruce sawfly survey
Poisoning stumps to prevent sprouting	Trends in white pine weevil populations
An account book for forest owners	Phenological observations
Costs and results of girdling hardwoods	Survey of stand improvement operations
Comparison of different log rules	Control of white pine blister rust
Charcoal production and marketing	Relation of water quality of streams to forest type
Marketing fuel wood	Thinning sprout hardwoods
Trend of stumpage prices	Cord scaling table
Gypsy moth hatching dates	Course of seasonal height growth
Nursery fertilizers	
Natural grafts in forest trees	
Planting in ploughed furrows	

### Demonstrations of Forestry

Experiments in the woods naturally become objects for demonstration. Chief among these are the various management activities on the Fox State Forest. This is a demonstration of multiple use of forest land. Opportunities for recreation include two public camp grounds, many trails and points of botanical and historical interest, and a game refuge covering about one-fourth of the area, the remainder being open to hunting. Protection against erosion and of domestic water supply are emphasized. An annual harvest of forest products of many



kinds is made. The Annual Field Day, started in 1934, is a special feature of the demonstration activities. Visitors are taken on special tours of the forest and shown operations and experimental work in progress. During the spring and fall many groups of college students who are studying forestry are conducted over the forest. High school and grammar school classes with their teachers take part in brief instructional outings under guidance of the staff. Visitors on the camp ground and many other groups are similarly received. Lectures, special exhibits at fairs and meetings are arranged in many parts of the state. Large groups of Boy Scouts have spent a few days encamped on the camp ground on several occasions during which forestry activities have been organized for them.

## TREE FARM PROGRAM

JOHN R. FRENCH, *Chairman, N. H. Tree Farm Committee*

The New Hampshire Tree Farm program, launched in 1950, continued to grow and on December 5, 1960 counted 282 Tree Farms totaling 198,798 acres. This program is dedicated to the encouragement of good forest management practices on privately owned forest lands. It provides public recognition to those owners who have met Tree Farm standards by presenting to them a sign and certificate as evidence of their accomplishments in the field of good forest management. Inspection and administration are in the hands of the New Hampshire Tree Farm Committee made up largely of professional foresters privately employed. Sponsorship is by the Granite State Forest Industries Committee, a local committee of American Forest Products Industries, Inc., Washington, D. C., the national sponsors.

New Hampshire forest land owners wishing additional information concerning Tree Farming are urged to contact any of the following committee members: John R. French, Draper Corporation, Beebe River, chairman; Richard V. Ashton, Oxford Paper Co., Concord; Kenneth E. Barraclough, Extension Forester, Durham; Walter F. Breckenridge, Davis & Symonds Lumber Co., Claremont; F. W. Cowan, St. Regis Paper Co., West Stewartstown; William E. Dussault, Andorra Forest, Stoddard; Lloyd W. Hawkesen, Lakes Region Chipping Corp., Ashland; Allan W. Plumb, New England Forestry Foundation, Newport; Lawrence W. Rathbun, Society for the Protection of New Hampshire Forests, Concord; and Willard A. Ruch, International Paper Co., North Stratford.

## FOREST PRODUCTS CUT IN 1958 AND 1959

HENRY I. BALDWIN, *Research Forester*

The lumber cut continued to be much below that of recent years, but showed some increase in 1959. The same trend was indicated in pulpwood and other products. The reported cut of hardwood lumber was almost the same for each year and has shown little change in many years. The use of hardwood for pulpwood relative to softwood showed a further increase, the cut of hardwood nearly equalling that of softwood in 1959. Total utilization of New Hampshire forests appears to have decreased during the past three years.

A comparison has been made of the annual cut of forest products as reported to the Tax Commission by stumpage owners, and that reported to the Forestry and Recreation Commission by consuming mills. No exact comparison can be made because the Tax Commission reports on a fiscal year basis ending September 30th and those of this Commission are for the calendar year, as specified by law in each case. However, over a number of years these differences in reporting periods may be less important than for any one year.

### PULPWOOD CUT IN NEW HAMPSHIRE 1958 AND 1959 (Calendar Years)

(Cords: Rough Wood Basis\*)

Kind	Total Cut (Consumed in N.H. Mills plus exports)		Exports	
	1958	1959	1958	1959
Spruce and Fir .....	86,306	110,132	28,975	49,150
Hemlock and Tamarack ....	3,661	3,793	8	18
Pine .....	17,763	4,725	2,293	26
<b>Total Softwood .....</b>	<b>107,730</b>	<b>118,650</b>	<b>31,276</b>	<b>49,194</b>
Beech, Birch, Maple .....	95,269	104,430	15,315	13,637
Oak .....	760	2,865	40	1,865
Aspen (Popple) .....	2,685	3,542		449
Miscellaneous .....	719	900		
<b>Total Hardwood .....</b>	<b>99,433</b>	<b>111,737</b>	<b>15,355</b>	<b>15,951</b>
<b>Total All Species .....</b>	<b>207,163</b>	<b>230,387</b>	<b>46,631</b>	<b>65,145</b>
Mills reporting cut .....	9	9		

\* Peeled wood converted to rough by adding 15%.

## LUMBER CUT 1958 AND 1959 (Calendar Years)

(Thousands of Board Feet)

	N.H. Mills	1958 Logs Exported	Total	N.H. Mills	1959 Logs Exported	Total
<b>SOFTWOOD</b>						
Balsam Fir .....	1,469		1,469	829	5	834
Cedar .....	1		1	6		6
Hemlock .....	21,561	584	22,145	22,630	994	23,624
Larch .....	25		25	20		20
Pine, Pitch .....	1,451		1,451	234		234
Pine, Red .....	1,688		1,688	1,270	32	1,302
Pine, White .....	104,505	2,143	106,648	132,109	2,218	134,327
Spruce .....	5,895	401	6,296	9,589	276	9,865
Total Softwoods .....	136,595	3,128	139,723	166,687	3,525	170,212
<b>HARDWOOD</b>						
Ash .....	552	40	592	627	53	680
Aspen .....	10		10	1		1
Basswood .....	192	6	198	152	11	163
Beech .....	1,272		1,272	1,499	25	1,524
Birch .....	12,277	2,014	14,291	11,358	959	12,317
Elm .....	84		84	97		97
Maple .....	2,988	202	3,190	3,562	385	3,947
Oak .....	6,609	1,301	7,910	5,378	707	6,085
Other .....	26	46	72	9	2,211	2,220
Total Hardwoods .....	24,010	3,609	27,619	22,683	4,351	27,034
Total all Species .....	160,605	6,737	167,342	189,370	7,876	197,246
<b>No. of Mills</b>						
Reporting cut .....	318-16		334	296-11		307
<b>No. of Idle</b>						
Mills .....	30			21		

## TIMBER CONSUMPTION BY WOOD-USING INDUSTRIES

(Exclusive of lumber and pulpwood)

Equivalent in Thousands of Board Feet

Product	1958			1959		
	N.H. Mills	Exported	Total	N.H. Mills	Exported	Total
Cooperage Logs .....	2,690	605	3,295	2,040	1,313	3,353
Excelsior Bolts .....	974		974	429		429
Turnery Bolts .....	5,067	2,165	7,232	6,050	1,392	7,442
Veneer Logs .....	2,769	3,141	5,910	4,747	6,799	11,546
Handle Stock .....	317	134	451	200	184	384
Box Shook Logs .....	565		565	589		589
Piling .....	51		51	6,000		6,000
Posts and Piles .....	15		15	2,000		2,000
Miscellaneous .....	562		562	2,044	2,634	4,678
Totals .....	13,010	6,045	19,055	24,099	12,322	36,421
No. Mills Reporting ..	35	12	47	35	12	47

## SUMMARY OF FOREST UTILIZATION

	1958		1959	
	M Bd. Ft.	Cords	M Bd. Ft.	Cords
Sawlogs cut by N.H. mills .....	160,609		189,370	
Sawlogs exported .....	6,737		7,876	
Pulpwood consumed in N.H. ....		160,532		165,242
Pulpwood exported .....		46,631		65,145
Industrial products, N.H. mills ..	6,969	12,083	22,170	3,858
Industrial products exported .....	1,715	1,835	10,931	2,783
Fuelwood and miscellaneous (Estimated) .....		10,000		10,000
Totals .....	176,030	231,081	230,347	247,028
Total Equivalent in Cords .....		583,141		707,774

FINANCIAL STATEMENT  
FORESTRY AND RECREATION COMMISSION  
FORESTRY DIVISION  
July 1, 1958 to June 30, 1959  
GENERAL FUNDS

	Balance 7/1/58	Appropri- ation	Income Added	Transfer Added	Transfer Deducted	Total Available	Expendi- tures	Appro. Lapses	Reserve for Purchase Commitments	Appropri- ation Balance
Administration .....		\$45,208.29		\$1,616.99		\$46,825.28	\$46,530.54	\$294.74		
District Fire Supervision .....		61,795.47	\$66,980.17			128,775.64	125,757.13	1,841.42		\$3,018.51
Lookout Stations .....		62,028.02				62,028.02	60,186.60			
Warden Training .....										
Conferences .....		6,000.00				6,000.00	3,653.21	2,346.79		
Prevention of Fires .....		14,871.28				14,871.28	13,455.95	1,415.33		
White Pine Blister Rust .....	\$962.33	21,267.76	19,975.00			42,205.09	40,389.11			1,815.98
Northeastern Forest .....										
Fire Compact .....		792.50				792.50	792.50			
Reimbursement to .....										
Municipalities .....		7,365.22				7,365.22	7,365.22			
Forestry Warehouse .....	37,102.64					37,102.64	37,102.64			
Nursery .....		15,043.64	20,085.26			35,128.90	34,351.10			777.80
Reforestation .....		4,039.02				4,039.02	4,006.03	32.99		
Cooperative Forest .....										
Management .....		16,000.00				16,000.00	16,000.00			
Maintenance .....		—	527.67							
<b>Total Forestry Division</b> .....	\$38,064.97	\$253,863.53	\$107,568.10	\$1,616.99		\$401,133.59	\$389,590.03	\$5,931.27		\$5,612.29

FINANCIAL STATEMENT  
FORESTRY AND RECREATION COMMISSION  
FORESTRY DIVISION  
July 1, 1959 to June 30, 1960  
GENERAL FUNDS

	Balance 7/1/59	Appropri- ation	Income Added	Transfer Added	Transfer Deducted	Total Available	Expendi- tures	Appro. Lapses	Reserve for Appropri- ation Purchase Commitments Balance
Administration .....		\$49,040.67		\$520.04		\$49,560.71	\$48,924.90	\$635.81	\$1,699.72
District Fire Supervision .....	\$3,018.51	59,811.97	\$64,595.29			127,425.77	125,726.05		
Lookout Stations .....		62,213.82				62,213.82	59,424.03	2,789.79	
Warden Training .....									
Conferences .....		6,000.00	1,000.00			7,000.00	6,998.60	1.40	
Prevention of Fires .....		14,796.28				14,796.28	14,542.36	253.92	
White Pine Blister Rust .....	1,815.98	21,834.15	22,559.02			46,209.15	43,124.36		3,084.79
Northeastern Forest Fire Compact .....						892.50	724.80	167.70	
Reimbursement to Municipalities .....		5,518.95				5,518.95	3,648.60	1,870.35	
Nursery .....	777.80	22,491.52	21,929.15			45,198.47	42,129.66		3,068.81
Cooperative Forest Management .....		16,000.00				16,000.00	16,000.00		
Refunds .....			58.00			58.00	58.00		
Maintenance .....		—	527.67						
Total Forestry Division .....	\$5,612.29	\$258,072.19	\$110,669.13	\$520.04		\$374,873.65	\$361,301.36	\$5,718.97	\$7,953.32

## SPECIAL FUNDS

July 1, 1958 to June 30, 1959

	Balance 7/1/58	Appropri- ation	Income Added	Transfers Added	Transfers Deducted	Total Available	Expendi- tures	Balance
Forest Improvement Fund—State								
Forestry Operations and State								
Forest Lands	\$7,866.38		\$76,030.14	\$4,831.76		\$88,728.28	\$66,820.97	\$21,907.31
Caroline A. Fox Research Fund	20,468.47		10,427.50	234.65		31,130.62	9,269.98	21,860.64
Albert E. Pillsbury Fund	9,599.11		322.31			9,921.42		9,921.42
Soil Bank Tree Program	2,425.87		33,770.60	18.18	\$805.00	35,409.65	14,376.28	21,033.37
Blackwater Project	2,002.70		14,720.73		4,818.59	11,904.84	11,519.67	385.17
Forest Conservation Unorganized and Unincorporated Places	61,273.93					61,273.93	24,507.28	36,766.65
Rebates of Forest Operations	1,100.00					1,100.00	1,050.00	2,150.00
Totals	\$104,736.46		\$135,271.28	\$5,084.59	\$5,623.59	\$239,468.74	\$125,444.18	\$114,024.56

July 1, 1959 to June 30, 1960

	Balance 7/1/59	Appropri- ation	Income Added	Transfers Added	Transfers Deducted	Total Available	Expendi- tures	Balance
Forest Improvement Fund—State								
Forestry Operations and State								
Forest Lands	\$21,907.31		\$54,160.40	\$4,761.72		\$80,829.43	\$78,529.93	\$2,299.50
Caroline A. Fox Research Fund	21,860.64		11,023.92	234.65		33,119.21	8,953.36	24,165.85
Albert E. Pillsbury Fund	9,921.42		475.53			10,396.95		10,396.95
Soil Bank Tree Program	21,033.37		8,190.00			29,223.37	19,353.26	9,870.11
Blackwater Project	385.17		22,371.43		\$4,761.72	17,994.88	13,130.06	4,864.82
Forest Conservation Unorganized and Unincorporated Places	36,766.65			9,023.57		45,790.22	13,525.40	32,264.82
Rebates of Forest Operations	2,150.00					2,150.00	400.00	1,750.00
Totals	\$114,024.56		\$96,221.28	\$14,019.94	\$4,761.72	\$219,504.06	\$133,892.01	\$85,612.05

**LEGISLATION 1958-1959**

Acts of the Special Session of 1958 and the 1959 Session of the New Hampshire General Court produced several statutes or amendments affecting the operations and responsibilities of the Commission. These have been briefed from "Public Acts and Joint Resolutions" of these sessions published by the Secretary of State.

**CHAPTER 6**

**An act Relative to Additional Personnel for the Fish and Game Department, State Police, Motor Vehicle Department and Recreation Division in Order to Put Into Effect the Reduced Work Week for Certain State Employees**

**CHAPTER 37**

**An Act to Provide for Payment of State Expenses by Means of Working Capital Funds**

Governor authorized to draw on general funds including special and capital funds for departments other than Public Works and Highways or Fish and Game, such funds to be used for working capital.

**CHAPTER 74**

**An Act Providing a Longer Hunting Season and Increased License Fees for Bow and Arrow Hunting**

Special license to entitle the holder to bow and arrow hunting for 31 days prior to the open season for deer in Bear Brook Reservation.

**CHAPTER 79**

**An Act Relative to Reimbursement to Town for Loss of Tax on Forest Reserve Lands**

Any town in which national forest or state forest lands are located may apply for an abatement of a portion of its state tax not exceeding one-half the taxes such town might have received from such lands had they been taxable. Does not apply to recreational lands.

**CHAPTER 90**

**An Act to Authorize a Parkway Type of Public Highway Through Franconia Notch**

Authorizes the Commissioner of Public Works and Highways to lay out, construct and maintain as part of the Interstate and Defense Highway System.



**CHAPTER 101****An Act Relative to Fines for Overtime Parking at State-Owned  
Parking Areas at Hampton Beach**

Provides for 50 cent fines to be retained by the Recreation Division for over-parking; violation of reasonable rules and regulations shall be subject to a \$5 fine.

**CHAPTER 113****An Act Relative to Fill in Great Ponds and Purchase of Sand or  
Gravel from the Bed of Public Waters**

Upon recommendation of Water Resources Board after consultation with the Fish and Game Commission and such other state agencies as may be involved sand and gravel in the bed of navigable waters or great ponds may be sold.

**CHAPTER 135****An Act to Clarify the Status of Trees and Other Roadside Growth**

The Commissioner of Public Works and Highways, selectmen of towns and county commissioners of unorganized places are empowered to declare any tree within the limits of highways, roads or streets over which they have jurisdiction a public nuisance by reason or danger to traffic or spread of tree disease. Abutting owners on whose property such tree is located shall be notified, and have right to appeal. After such notification the authorities are to remove the tree without cost or compensation to the owner. This does not apply to public shade or ornamental trees.

**CHAPTER 172****An Act Relative to Membership on the Council of Resources  
and Development**

Amended to include representation of the Department of Agriculture.

**CHAPTER 186****An Act Establishing the State Historical Commission**

Provides for appointment of a commission which in conducting its affairs may call for assistance and cooperation of the Forestry and Recreation Commission as well as other state agencies.

**CHAPTER 210****An Act Relative to Trespassing on Land of Another and at Race Tracks and Defining Cultivated Land**

Land used for commercial production of Christmas trees defined as cultivated land.

**CHAPTER 235****An Act Relative to Reclassification of a Road in the Town of Rindge**

Cathedral of the Pines Road extended to Annett State Forest and classified as a Class III highway.

**CHAPTER 257****An Act Providing for Additional Facilities at Moose Brook State Park**

\$15,000 appropriated for constructing additional recreational facilities.

**CHAPTER 261****An Act Relating to the Improvement of Rye Harbor**

Authorizes state participation in the harbor improvement, including making available to the federal government any lands owned by the state suitable for the purpose of the project.

**CHAPTER 268****An Act Making Appropriations for the Expense of Certain Departments of the State for the Year Ending June 30, 1960**

Appropriations for Forestry and Recreation Division. Authorizes Forestry Division to set up an Osmove treating plant for posts and guard rails to be sold to other state departments.

**CHAPTER 269****An Act Making Appropriations for the Expense of Certain Departments of the State for the Year Ending June 30, 1961**

Appropriations for Forestry and Recreation Divisions.

**CHAPTER 277****An Act Relative to the So-Called Timber Tax**

Requires bond or security before or during the cutting period when deemed necessary by assessing officials or the Tax Commission to insure payment of yield tax. Certificate of receipt of intent to cut shall be posted on the cutting area. Report of cut may be required immediately following cutting if payment of yield tax is believed in jeopardy.

**CHAPTER 278****An Act Relative to Certain Islands in Great Ponds**

Islands in Baptist Pond in Springfield, Billings Pond in Sutton, Eastman Pond in Grantham are added to islands placed under the jurisdiction of the Forestry and Recreation Commission as public reservations.

**CHAPTER 297****An Act Making Appropriations for Capital Improvements and Long Term Repairs for the State of N. H.**

Appropriations for Recreation Division: \$52,000 for Hampton Beach sea-wall walk, \$14,000 for White Lake Park water system and \$8,500 for Mount Prospect Park repairs.

**CHAPTER 299****An Act Relative to the Operation of Passenger Tramways**

Provides for registration and inspection of all ski lifts and similar devices, and for emergency shut-down orders in case undue hazards are disclosed.

**CHAPTER 300****An Act Ratifying the Northeastern Water and Related Land Resources Compact**

Provides for compact with any two or more New England states and appointment of a Northeastern Resources Commission to study and plan the use of water and related land resources.

**CHAPTER 302****An Act Providing for a Deficiency Appropriation for the Recreation Division and to Reimburse the Town of Hampton**

\$32,763.14 appropriated for fiscal year ended June 30, 1959 and \$4000 to reimburse the Town of Hampton for the state's share of lighting the parking area at Hampton Beach, \$2000 for fiscal year 1959 and \$2000 for fiscal year 1960.

**CHAPTER 303****An Act Relative to Acquisition of Land at Hampton Harbor**

\$6000 appropriated to cover land acquisition and \$8000 for construction of parking area on state land in Seabrook by the Department of Public Works and Highways.

**CHAPTER 305****An Act Providing for the Acquisition of Fort Dearborn in Rye**

\$95,000 appropriated for purchase of federal lands declared surplus, conditional on property being available for purchase.

**CHAPTER 306****An Act Relative to Fishing on Great Bay and Other Waters, Operation of Motor Vehicles on Ice at Great Bay and Penalty for Depositing Refuse on Public Waters****CHAPTER 317****Joint Resolution in Favor of Peter C. Cummings**

\$520 to be paid in compensation for injuries received at the Grantham Mountain Fire in 1953.

**CHAPTER 319****Joint Resolution Relative to the Old Man of the Mountain**

Any balance of 1957 appropriations shall not lapse but be available for studies to determine whether further measures should be taken to protect the profile.

**CHAPTER 340****Joint Resolution Providing Additional Funds for State Advertising and Promotion**

\$60,000 appropriated for each of fiscal years 1960 and 1961. Planning and Development Commission and Recreation Division to coordinate their activities.

**CHAPTER 341****Joint Resolution Authorizing a Study to Determine a Feasible Location of a Multiple-Use State Park on Ossipee Lake and Willand Pond**

\$25,000 appropriated to be expended by Recreation Division, \$19,000 of which for Ossipee Lake and \$6000 for Willand Pond. Results to be reported to county delegations at next session of General Court.

**PARTIAL DIRECTORY OF CONSERVATION AGENCIES  
AND OFFICIALS IN NEW HAMPSHIRE**

**N.H. Forestry and Recreation Commission**

Forestry Division—Recreation Division

401 State House Annex, Concord, Tel. Capitol 5-6611

William H. Messeck, Jr., State Forester

Russell B. Tobey, Director of Recreation

**N.H. Extension Service**

Durham

Kenneth E. Barraclough, Extension Forester

**County Foresters**

County	Name	Address
Belknap-Strafford	Leighton, Roger S.	County Extension Office Rochester—Tel. 375 719 Main St. Laconia—Tel. Lakeside 4-2121
Carroll	Dodge, Arthur G., Jr.	County Extension Office Conway—Tel. Hickory 7-5922
Cheshire-Sullivan	Richards, Tudor	County Extension Office 40 Mechanic St. Keene—Tel. Elmwood 2-4550
Sullivan	*Szymujko, Joseph	County Extension Office Claremont—Tel. 21
Coos	Sargent, John E.	County Extension Office Lancaster—Tel. 8-4961
Grafton	Sargent, Leslie B.	County Extension Office Woodsville—Tel. 7-2061
Hillsborough	Breck, Robert W.	County Extension Office Milford—Tel. 45
Merrimack	Thompson, Wilbur E.	County Extension Office 36 Warren St. Concord—Tel. Capitol 5-5505
Rockingham	Sloan, Roger P.	County Extension Office Exeter—Tel. President 2-2741
Rockingham	*Chase, Donald H.	County Extension Office Exeter—Tel. President 2-2741

\* Assistant County Forester

**University of New Hampshire**

Department of Forestry

Petee Hall, Durham

Dr. Paul E. Bruns, Chairman

**U.S. Forest Service**

White Mountain National Forest, Laconia

Gerald S. Wheeler, Supervisor

**Northeastern Forest Experiment Station**

Laconia Research Center, Laconia

Victor S. Jensen, in charge

**Society for the Protection of New Hampshire Forests**

5 South State Street, Concord

Lawrance W. Rathbun, Forester

Leslie Clark, Conservation Education Specialist

**Granite State Forest Industries Committee**

Lincoln

Henry C. Waldo, Chairman

**N.H. Tree Farm Committee**

Beebe River

John R. French, Chairman

**N.H. Timberland Owners' Association**

Berlin

Daniel J. Horan, Secretary

**New England Lumbermen's Association**

Bank Building, Suncook

**White Pine Blister Rust Control**

District Agents

W. S. Codman, Forest Service Bldg., Laconia

S. D. Conner, 40 Mechanic St., Keene

R. E. Curtis, 59 North Main St., Rochester

**Insects and Diseases—Reports and Inquiries:**

Gypsy Moth and Brown-tail Moth—State Entomologist, Durham

Dutch Elm Disease—State Entomologist, Durham

Forest and Shade Tree Insects and Diseases—State Entomologist, Durham

White Pine Blister Rust—State Forester, Concord, or district agents

**Gypsy Moth Quarantine Inspectors**

Agricultural Research Service, Plant Pest Control Division

U.S. Department of Agriculture

**E. Coos and Carroll Counties**

L. L. Gretschesell, Box 31, South Paris, Maine

Tel. Norway—Pilgrim 3-2302

**W. Coos and Grafton Counties**

R. T. Rambo, Box 246, Montpelier, Vermont

Tel. Capitol 3-2311 Ext. 551

**Cheshire and Sullivan Counties**

V. R. Call, Box 453, Bellows Falls, Vermont

Tel. Homestead 3-3616

**Belknap, Merrimack and Hillsborough Counties**

G. F. Langwasser, Box 231 (15 Pleasant St.) Concord, N. H.

Tel. Capitol 4-4272

**Rockingham and Strafford Counties**

R. H. Flaker, Box 607, Rochester, N. H.

Tel. Rochester 383

**N.H. Federation of Forest Fire Wardens Associations**

Robert T. Palmer, Secretary, Wakefield

**N.H. Fish and Game Department**

34 Bridge St., at Traffic Circle, Concord

**N.H. Natural Resources Council**5 South State St., Concord  
Tel. CApitol 4-0361**N.H. Natural Preserve Forum**5 South State St., Concord  
Tel. CApitol 4-0361**Audubon Society of New Hampshire**18 School St., Concord  
Tel. CApitol 8-8211**New England Wild Flower Preservation Society, New Hampshire Branch**Mrs. G. W. Cottrell, Jr.  
RFD 2, Hillsboro**N.H. Society of Engineers**Harold E. Langley, President  
Bridge Design Division, N.H. Department of Public Works and Highways  
State House Annex, Concord**Soil Conservation Service—U.S. Department of Agriculture**State Office, Federal Building, Durham  
Kenneth E. Grant, State Conservationist

County	Address	Work Unit Conservationist
Belknap	Forestry Building Laconia	William R. Hauck
Carroll	Main Street Conway	James A. Haine, Jr.
Cheshire	P.O. Box 501 Keene	Walter E. Nelson
Coos	York Building Main St., Lancaster	Leslie N. Blaisdell
Grafton	Post Office Bldg. 31 Court St., Woodsville	Donald G. Ferren
Hillsborough	Union Square Milford	Robert Johnson
Merrimack	36 Warren St. Concord	Donald G. Burbank
Rockingham	Lincoln St. Exeter	Herman W. Parker
Strafford	22 South Main St. Rochester	Floyd V. Barker
Sullivan	25 Mulberry St. Claremont	Guy E. Wheelock, Jr.

**N.H. Maple Producers Association**

Clement Lyon, Executive Secretary  
Bureau of Markets, State House Annex, Concord

**N.H. Roadside Improvement Associates**

Mrs. James A. Funkhouser, President  
107 Madbury Rd., Durham

**N.H. Arborists' Association**

George Flint, President  
Keene  
David Watson, Secretary  
Newington

**Nature Conservancy of New Hampshire, Inc.**

George K. Ripley, President  
Troy

**Society of American Foresters, Granite State Chapter**

Theodore Natti, Chairman  
259 Pembroke St., Concord

**Bureau of Sport Fisheries and Wildlife, U.S. Dept. of Interior**

Branch of River Basins, 3 Pleasant St., Concord  
Tel. Capitol 8-8716  
Carl Nelson, Area Office, Supervisor

**Predator and Rodent Control**

Fred Courtsal  
Room 202, P.O. Bldg., Durham

**Wildlife Management and Enforcement**

Howard R. Brown, Game Management Agent  
P.O. Bldg., Durham

**Branch of Fishery Management**

Paul Hooper, Fishery Management Biologist

**National Fish Hatchery**

Nashua  
Bartlett H. Hazen, Fish Hatchery Manager

**National Fish Hatchery**

York Pond Kilkenny  
Henry A. Delisle, Fish Hatchery Manager  
P.O. Berlin