



EDITOR'S

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FOREST RESEARCH NOTES

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PACIFIC NORTHWEST FOREST EXPERIMENT STATION

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PREFACE

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The several research projects upon which the Pacific Northwest Forest Experiment Station is working are continually yielding results of interest and value to those engaged in forest enterprises. To make these results immediately available to those most likely to use them is the purpose of these "FOREST RESEARCH NOTES". They will be issued at irregular intervals three or four times a year and distributed gratis, to those who wish them, up to the limit of the edition.

These Notes may be merely items of technical significance taken from the field records of investigators, or they may be condensed progress reports of current projects, or they may be the digests of completed studies, issued in this way in advance of formal publication.

Always the writer will seek brevity, even at the expense of completeness, and the reader should realize the impossibilities of adequately embodying in a paragraph the conclusions of a season's work. Supplementary details may always be had from the Station, 424 U. S. Court House, Portland, Oregon.

LIGHTNING STORM FREQUENCY ON THE NATIONAL FORESTS

Lightning is responsible for about one quarter of all the forest fires in Oregon and Washington. On the National Forests (which are chiefly in the mountains) the number of lightning fires is almost as large as of all man-caused fires. It is therefore most important for the forest protectionist to know all he can about the natural laws governing the occurrence of those storms, that he may be better prepared to combat lightning fires.

With this in view the Forest Service undertook a few years ago a statistical study of the lightning storms on the National Forests during the summer. Every lookout man has been required to keep since 1924 on a form provided for the purpose a record of every lightning storm he saw. He noted its location, time, course, number of flashes, whether with or without rain, etc.

These reports have recently been compiled and analyzed at the Experiment Station to the extent of showing where the fires have occurred in the last four years. This information, the first fruit of this study, is presented graphically on the attached map*, where for every township wholly or in part within a National Forest the number of summer storms that touched that township is shown by symbols. It is conspicuous that certain parts of these states are visited by very few storms; others by a great many. It is the presumption that the frequency of storms in the past is an index of what may be expected in the future, though the study has not yet covered enough years to give a truly dependable normal.

These same lightning storm reports are being further analyzed to learn from them such other lessons as the time of day and year they occur, their effectiveness in setting fires, their paths, the accompaniment of rain, etc.

The Weather Bureau, moreover, has already used these reports in its study of fire weather forecasting and so been enabled to make some accurate prediction of lightning storms in the mountains from observations made at its valley stations.

* Chart not reproduced in reprint; out of date.

RELATION OF "AVERAGE" TO "FULLY-STOCKED" STANDS OF FIR

The field and office work of preparing normal yield tables for second-growth Douglas fir forests was concluded recently by this Station and a digest of the principal tables was published in the West Coast Lumberman of May 1, 1928. A thorough-going report by R. E. McArdle on this subject is in the course of publication as a Department of Agriculture Bulletin.

With these yield tables for normal fully-stocked stands in hand, the foresters must have information wherewith to apply these tables to average stands that are ordinarily more or less understocked over large areas. For two field seasons Walter H. Moyer has been engaged upon the problem, and reached certain conclusions of practical value as to the relation between the "fully-stocked" and the average stand of second-growth Douglas fir. His report is almost ready to submit for publication.

Some of the significant conclusions of this original piece of mensurational research are as follows:

1. By and large, second-growth stands of Douglas fir over large areas have a volume of approximately 80 per cent of the volumes given in the normal yield tables for fully-stocked stands. This assumes excluding non-forested areas, or major openings, which are large enough to be type-mapped in the survey.
2. Sampling a tract by strips is more reliable than by plots, providing the strip width is properly controlled.
3. Small holes in the canopy cover on the average ten per cent of the total area.
4. The most important cause of "small holes" is the presence of gullies, creeks, and small patches of hardwoods. Fire had been through half the areas studied, and undoubtedly was a factor in thinning the stands when they were young, although not a prominent agency in creating small holes in forests of pole size and larger as these were.
5. The total number of trees is a very unsatisfactory index of stocking.

6. Basal area is the most reliable index of stocking.

7. Though little is known regarding the transition of an understocked stand to a fully-stocked or normal condition, indications are that this progression is at the rate of about 2 per cent every five years.

8. The largest stand volumes are found on approximately 40 per cent slopes.

9. South and west aspects are apt to be variable in site quality; north and east aspects are in general the most favorable for growth.

GROWTH IN THE SPRUCE-HEMLOCK TYPE

To get some indication of the yield of pulpwood species in the "fog belt" a few sample plots in fully-stocked spruce-hemlock stands in Clatsop County, Oregon, were measured recently. Some of these plots were marked permanently that they may be remeasured periodically.

The following resumé of the plot data may be taken as samples of the yields that may be expected from normal stands in that region.

: All values on basis of one acre							
Age:	Total:	No. of	Total:	Aver.:		Vol. trees:	Vol. all
of :	no. :	trees :	basal:	diam-:	Aver.:	over 12" :	trees
plot:	of :	over 12" :	area:	eter :	hgt.:	Bd. ft. :	Cu. ft.
	trees:	D.B.H. :				Scribner :	incl. bark
67	129	108	266	19.5	138	79,200	16,600
70	143	130	293	19.4	138	91,000	18,600
78	176	136	298	17.6	131	84,100	18,270
79	114	101	292	21.7	132	80,600	16,390
80	230	176	303	15.6	128	81,700	19,120
80	236	201	350	16.5	132	99,500	21,000
100	166	119	282	17.6	118	68,600	15,320

GROWTH OF A 1912 PLANTATION

A permanent sample plot was recently established in the heart of an extensive Douglas fir plantation made in 1912 on the lower slope of Mt. Hobo, Tillamook County, Oregon. This forest, for it is already a forest, is now 19 growing seasons from seed. Here are some of the facts about this sample acre: -

Number of Douglas fir planted	approx. 1200
" of living Douglas firs	555
" of living Douglas firs 6 inches in diameter and larger	204
" of living Douglas firs 10 inches and larger	8
Total wood volume of all trees	1356 cu.ft. (or approx. 15 stacked cords)

STATION NEWS ITEMS

Associate Silviculturist W. H. Meyer has been granted a furlough for nine months to continue studies in forest mensuration at Yale under a Sterling Fellowship leading to the Ph.D. degree.

Assistant Silviculturist R. E. McArdle has been granted a furlough again for this college year to continue at the University of Michigan studies fundamental to research in forest fire prevention and control.

Assistant Silviculturist R. H. Westvold resigned September 15 to accept a position as Assistant Professor at the School of Forestry, Michigan State College.

Ernest L. Kolbe, a graduate of the University of Minnesota and Cornell Forest Schools, has been appointed Junior Forester and will assist in mensurational and silvicultural research projects.