

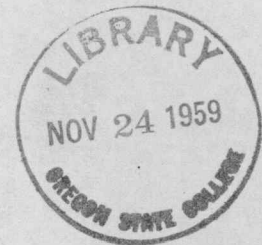
Comparative Growth  
of  
SUPPRESSED SECOND-GROWTH DOUGLAS FIR  
Before and After  
RELEASE BY LOGGING

\* \*

\*

by

Denver P. McComb



# CONTENTS

\*\*\*\*\*

\*\*\*

\*

	Page
Object-----	1
Instruments -----	1
Method of Procedure -----	1
Results -----	2
Discussion and Recommendations -----	4
Appendix:	
Map of Area -----	6
Field Data -----	7
Pictures -----	10

\*

\*      \*

\*

3000 Orchard St.  
Corvallis, Oregon  
April 30, 1938

Mr. W. F. McCulloch  
Professor of Forestry  
Oregon State College


Dear Mr. McCulloch:

I have the honor to transmit herewith for your approval a report on the Comparison of Growth of Second-growth Douglas Fir Before and After Release by Logging with Specific Reference to the Recovery of Suppressed Trees.

Accurate methods were used throughout the project to obtain the desired data, but due to the inherent characteristics of Douglas fir to grow in even-aged stands, it was extremely difficult to find a desirable area.

Practically all Douglas fir is clear-cut, and whenever any trees are left, slash fires retard the growth so much that a true record of natural growth is difficult to obtain. A difference in growth did not occur until about two years after logging and then the growth would be either negative or positive depending upon the site factors, fire, climate, mechanical injuries, physiographic and biotic factors.

Sincerely yours,



Object:

The object of this report is to determine the growth of second-growth Douglas fir, *Pseudotsuga taxifolia*, before and after release by logging with specific reference to the recovery of suppressed trees.

Instruments:

The instruments used were an increment borer, graduated scale in 1/20", and diameter tape.

Method of Procedure:

Before any measurements had been taken it was thought that any area which had been logged would be satisfactory, but most areas are clear-cut, and at least five or six years are required for growing in order that the growth may be accurately measured with a scale calibrated in 20ths of an inch.

After considerable inquiry from local woodsmen and natives of the surrounding farms and mills near Philomath, Oregon, an area was found near the highway in the S1/2 of Sec.30, T.11 S., and R.6 W. This property, which belongs to Fish & Hodge, Real Estate Brokers, Albany, Oregon, was logged in 1921, sixteen years ago.

The suppressed trees were determined by their crowns and trunks. In the main, a suppressed tree has a misshapen, flattened, short, and narrow crown; the trunk is considerably smaller than dominant or co-dominant trees of the same age. The trees were measured for diameter at breast height outside

the bark. Increment borings were taken on the average radius at or about two feet from the ground. In the event that this timber should be used for structural purposes, by making the borings low on the stump, the strength and quality of the finished product will not be degraded. After removing the core, by counting back sixteen annual growth rings, and measuring the growth with a scale, the amount of growth since logging can be determined. By counting back an additional sixteen years, sixteen annual growth rings, the amount of growth was determined for the period before logging.

#### Results:

It is to be expected that the degree to which growth is accelerated by cutting will depend upon the proportion of the stand removed, provided age, site, composition, and other factors remain comparable. It has been thought that all ages seldom fail to respond; however, of the trees measured, which were in a 110-year-old, even-aged stand, 16 of them showed a decrease in growth after logging; one tree showed equal growth; 93 trees showed an increase in growth after logging.

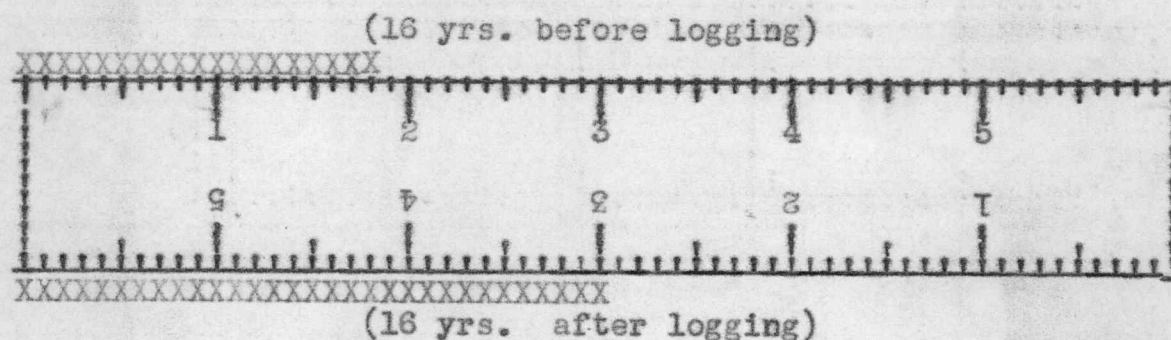
Of the 110 trees measured, there was 9.1" decrease in diameter growth as compared to 132.1" increase in diameter growth during the period after logging. There were 199.6" of growth before logging as compared to 328.8" of growth after logging during the same period of time.

Trees Measured	No. Showing Increase in Growth	No. Showing Decrease in Growth	No. Showing no Change in Growth	Av. DBH o.b.
110	93	16	1	15.2"

Table 1. Distribution of Growth

Total Dia Growth 16 yrs. Before Logging	Average Dia Growth 16 yrs. Before Logging	Total Dia Growth 16 yrs. After Logging	Average Dia Growth 16 yrs. After Logging	Percent of Increase in Growth After Logging
199.6"	1.8"	328.8"	3.0"	60%

Table 2. Comparison in Growth Before and After Logging



Relative Growth Before and After Logging

### Discussion and Recommendation:

It was noted that the trees, regardless of diameter, which were the most suppressed apparently showed the largest increase in increment provided that fire had not burned the trees enough to retard their growth. In all cases the trees that showed a decrease in growth after logging had been more affected by fire than the surrounding trees.

No difference in growth could be determined until at least two years after logging, at which time increased growth started gradually or abruptly as the years passed. For this reason, it is recommended that a study of this nature, which could be carried on in Section 35 of the <sup>McDonald Forest + Peavy</sup> Arboretum, be postponed until the year 1940. The area from which this data was taken probably will be altered, and it is very inconvenient for a student to work if one has only a few hours a day to be applied.

It is also suggested that increment borings should be made during a dry day so that they will not become saturated. If the cores get wet, it is practically impossible to determine the growth to within three or four years, when the increment measures not more than 1/64 of an inch per year, as it easily can in suppressed trees. By holding the core up toward the sun-light the annual growth rings can be seen distinctly and measured accurately.

## A P P E N D I X

Map of Area

Field Data

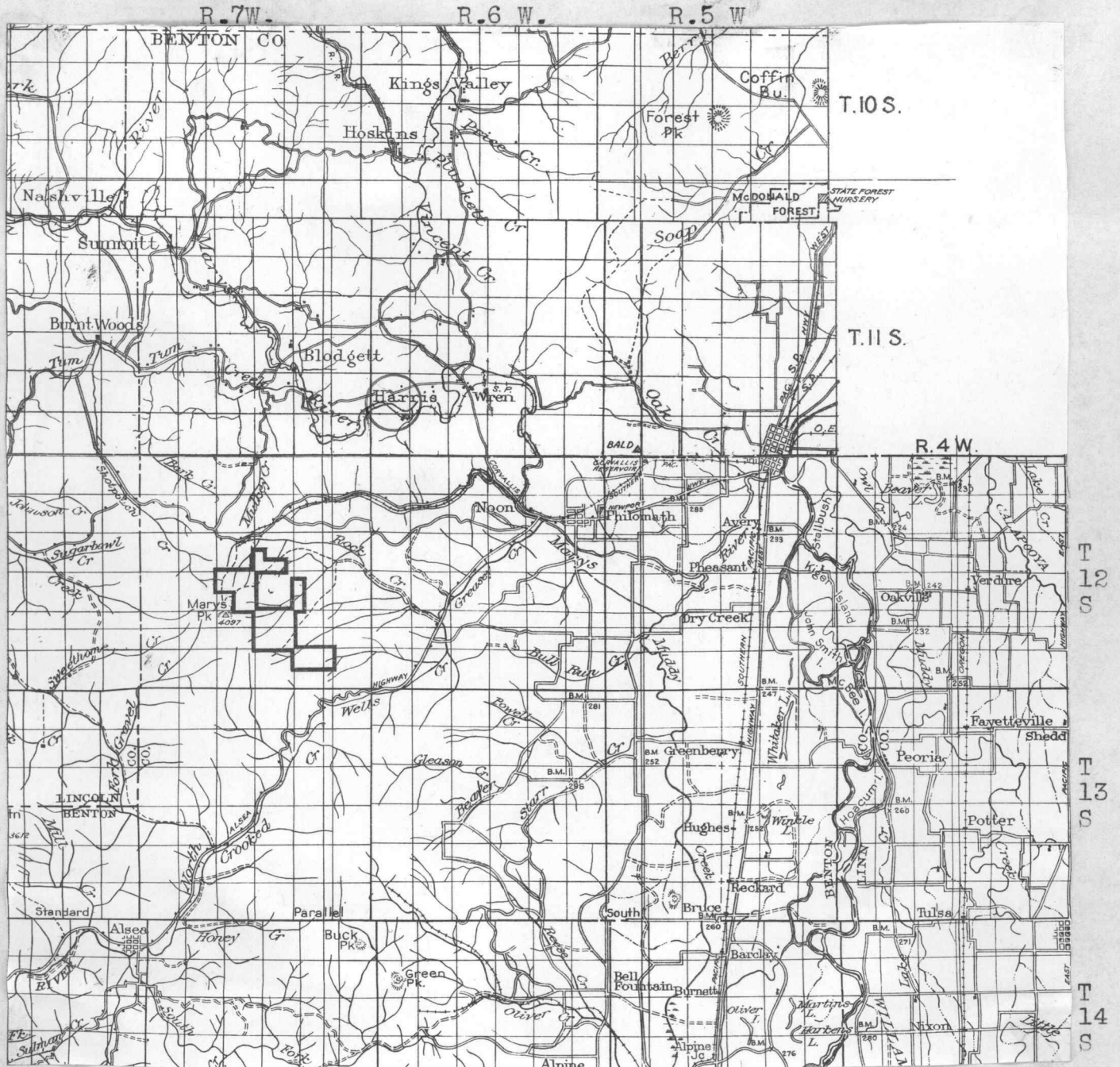
Pictures

\*\*\*

\*

\*

\*



Map of the Area and Surrounding Country

## FIELD DATA

Tree No.	DBH o.b. in.	Growth in 1/20" 16 yrs. Before Logging	Growth in 1/20" 16 yrs. After Logging
1	17	12	33
2	17	15	31
3	19	26	35
4	17	17	26
5	12	19	18
6	16	14	36
7	16	16	43
8	14	11	32
9	12	17	35
10	14	20	39
11	11	15	27
12	14	12	35
13	12	15	34
14	12	21	38
15	16	15	39
16	14	17	39
17	17	21	16
18	14	14	11
19	17	20	28
20	16	26	39
21	15	30	29
22	19	18	43
23	15	28	41
24	13	31	40
25	12	22	31
26	14	23	39
27	16	24	32
28	15	18	36
29	12	25	28
30	15	22	57
31	13	19	41
32	15	25	47
33	19	32	50
34	16	23	36
35	18	32	25
36	15	24	25
37	16	21	44
38	17	24	41
39	16	16	49
40	18	9	30

Tree No.	DBH o.b. in.	Growth in 1/20" 16 yrs. Before Logging	Growth in 1/20" 16 yrs. After Logging
41	15	12	26
42	19	12	19
43	17	15	28
44	16	19	34
45	9	11	10
46	16	18	25
47	9	20	12
48	12	10	15
49	16	11	16
50	18	14	28
51	16	11	15
52	14	20	33
53	17	19	30
54	14	14	21
55	13	23	23
56	14	11	18
57	21	34	41
58	21	40	35
59	20	42	33
60	20	25	24
70	15	13	52
71	20	39	32
72	14	24	19
73	16	15	23
74	16	13	22
75	12	13	7
76	16	4	12
77	15	18	28
78	18	11	20
79	11	9	16
80	18	9	20
81	16	18	33
82	17	8	24
83	15	10	25
84	17	10	23
85	12	16	30
86	15	18	32
87	16	16	37
88	15	28	47
89	12	10	22
90	15	17	28
91	15	24	45
92	16	7	20
93	18	16	32
94	16	28	43

Tree No.	DBH o.b. in.	Growth in 1/20" 16 yrs. Before Logging	Growth in 1/20" 16 yrs. After Logging
95	13	7	13
96	16	10	27
97	17	8	18
98	15	14	33
99	14	20	49
100	15	32	34
101	11	10	19
102	7	30	11
103	13	25	43
104	17	38	60
105	18	16	19
106	17	12	41
107	16	33	37
108	15	19	24
109	19	32	44
110	16	13	24
61	12	9	34
62	14	8	32
63	14	13	28
64	18	13	25
65	16	12	23
66	12	4	15
67	13	16	13
68	11	11	29
69	13	7	17
Total	110	1,996	3,288



Center of Area Measured



Relative Size of Suppressed Trees and Stumps



Burnt Stump and Tree



Second Growth Stand Partially Opened



Typical Crowns of Suppressed Trees



Burned Western End of Area Measured



Unburned Eastern End of Area Measured