

FOREST RESEARCH BRANCH



Progress Report

SELECTION CUTTING IN SPRUCE AND BALSAM FIR AT VALCARTIER

(Project Q-15)

by

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Two-acre transect plot No. 9 at Valcartier F.E.S. was remeasured in October 1963 in preparation for a scheduled 1964 selection cut in the 13-acre uneven-aged red spruce-balsam fir-yellow birch stand. The 1963 remeasurement results are shown in two figures and four tables that follow.

The aims of increasing spruce and yellow birch growth rates and volumes, and the hope that the larger diameter fir would prove windfirm, have all been realized ^{up} to 1963. A reduction in the growth rate of fir since the period 1954-59 was balanced by increased growth of spruce and yellow birch (Table 1). Basal area in 1963 reached 105.8 sq. ft. per acre and volume was 2,312 cu. ft. (Figure 1, Table 2). These values are respectively 17% and 18% greater than in 1959. Yellow birch saplings have moved rapidly upward through the diameter classes (Table 3). Annual spruce-fir mortality, 1959-63, was only 5.1 cu. ft. per acre.

The only disappointment was the decrease in what was already a small number of spruce saplings (Table 4). Red squirrels are effectively retarding red spruce seedling and sapling height growth by repeated clipping of the terminal shoots in the spring and early summers.

The 13-acre stand will be marked and cutover for conifer sawlogs and pulpwood in early fall 1964 and the growing stock, which should have reached 2,400 cu. ft., will be reduced to about 2,100 cu. ft. per acre. As in previous operations, no hard and fast rules for tree marking will be laid down. Cutting will be concentrated in mature fir 12 inches d.b.h.

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and over. Defective fir below 12 inches will also be removed. Spruce will be cut only if defective; the intention is to grow this species to a 20-inch maximum d.b.h.

Transect plot No. 9 will be remeasured before and after the 1964 logging and a report will be written during the winter of 1965.

Table 1. Net annual increment, total cubic feet per acre, 4 inches d.b.h. and over. (Transect Plot No. 9)

Period	Years	Species					Total
		Spruce	Fir	Spruce and fir	Yellow birch	Other hardwoods	
1935-38	3	-1	-29	-30	-19	-11	-60
1938-50	12	9	45	54	-17	2	39
1950-54	4	13	43	56	-28	0	28
1954-59	5	19	69	88	-10	5	83
1959-63	4	20	56	76	9	-4	82*
1935-59	24	11	40	51	-18	1	34
1935-63	28	12	43	55	-14	-1	40

* Hemlock growth shown in total only.

Table 2. Basal areas and volumes per acre by species, one inch d.b.h. and over. (Transect Plot No. 9)

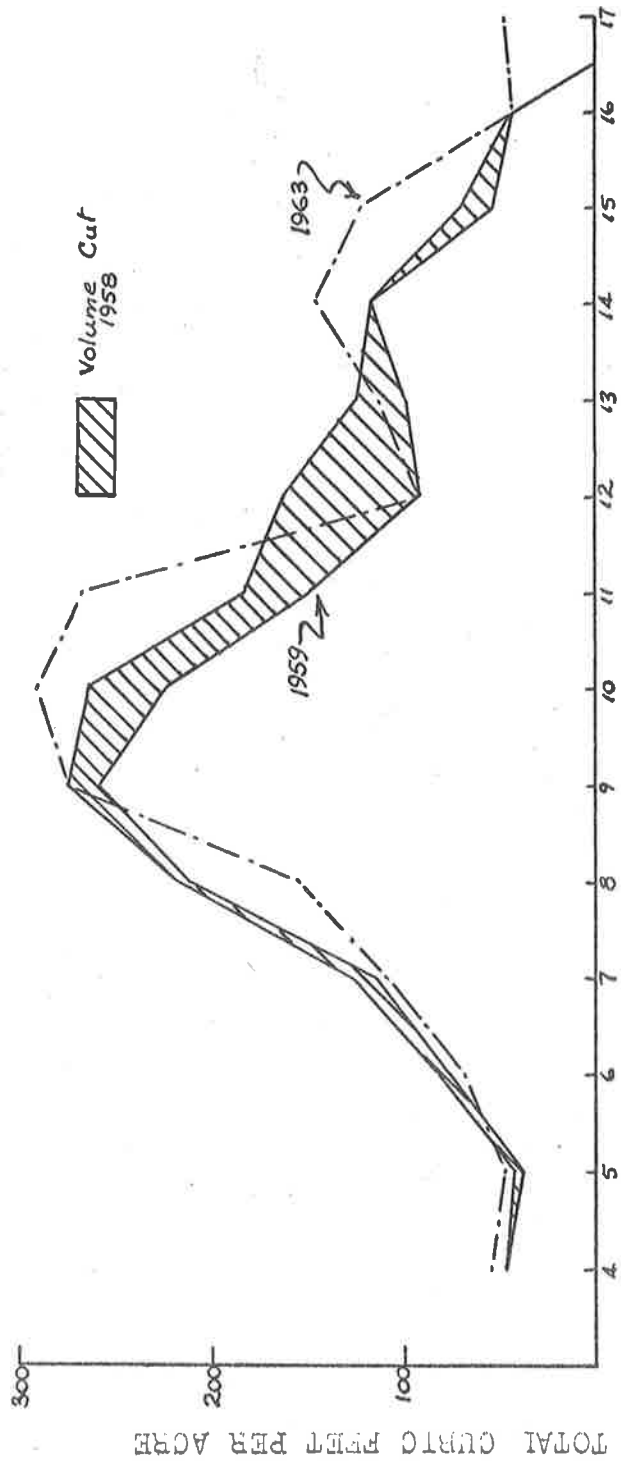
Species	Basal Area, Square Feet		Volume, Total Cu. Ft.	
	1959	1963	1959	1963
Spruce	14.6	17.2	372	451
Fir	59.7	69.5	1,224	1,457
Spruce and Fir	74.3	86.7	1,596	1,908
Hemlock	.2	.2	4	5
Yellow Birch	10.0	12.8	218	274
White Birch	1.0	1.0	13	15
Maple (r & s)	5.3	5.1	127	110
Beech	.01	"	0.1	"
Total	90.8	105.8	1,958	2,312
Per Cent Change		+ 17%		+ 18%

Table 3. Yellow birch stand tables, 1954, 1959 and 1963. (Transect Plot No. 9).

D.B.H.	Numbers of Yellow Birch Per Acre		
	1954	1959	1963
1	233	278	253
2	75	111	116
3	6	28	52
4	0	5	15
5	0	0	4
6	.5	.5	1
7	0	0	0
8	.5	.5	0
9	.5	.5	1
10 +	4	2	2
Total	319	425	444

Table 4. Spruce and Balsam Fir Stand Tables, Valcartier Transect Plot No. 9.
(Number of Trees per Acre)

D.B.H.	SPRUCE								BALSAM FIR							
	1935	1938	1950	1954	1959	1963	1935	1938	1950	1954	1959	1963				
1	2.5	2.5	5.0	4.0	5.5	3.5	264.5	186.5	188.5	153.0	258.5	308.0				
2	3.0	3.0	1.5	3.0	1.5	2.0	192.0	123.5	110.5	102.5	120.0	125.0				
3	3.5	3.0	1.5	3.0	2.5	2.0	133.0	103.0	69.5	53.0	62.0	72.0				
4	7.0	7.0	5.5	2.5	3.5	3.5	82.5	74.0	54.0	26.5	37.0	44.0				
5	1.5	1.5	1.5	1.5	0.5	2.0	74.0	67.0	48.0	26.0	18.0	21.0				
6	3.5	3.5	1.5	2.0	2.0	1.5	68.0	57.5	47.0	26.5	20.5	18.0				
7	3.0	2.5	1.5	1.5	1.5	1.5	60.5	43.0	39.5	31.5	20.0	19.0				
8	4.0	3.0	4.5	4.0	1.0	0.5	32.0	16.5	36.0	23.0	27.0	20.0				
9	2.5	2.5	1.0	3.0	3.0	2.0	14.0	6.0	24.0	21.5	22.5	25.0				
10	1.5	1.0	1.0	0.5	4.0	3.5	19.0	7.0	11.5	8.5	13.0	18.0				
11	1.0	0.5	2.0	2.5	1.5	1.5	8.0	1.5	10.0	4.5	8.0	14.0				
12	1.0	1.0	2.5	2.0	2.0	2.0	11.0	0.5	4.0	3.0	2.5	2.5				
13			1.0	2.0	2.0	1.0	2.0	0.5	2.0	2.0	2.0	3.5				
14			1.5	1.0	2.0	2.5	1.0		0.5		2.0	2.5				
15				1.0	1.5	3.0	0.5					0.5				
16					1.0	1.0										
17						1.0										
Total	34.0	31.0	31.5	33.5	35.0	34.0	962.0	686.5	645.0	481.5	613.0	693.5				



Diameter Class - Inches
 Stock Profile, Spruce and Fir, T.P. 9
 Figure 1.

Figure 2. Fluctuations in Growing Stock, and Species Per Cent of Total Growing Stock, T.P.9
 (*per cent indicated by numerals on graph)

