SPRUCE BEETLE SURVEY OF THE CROWSNEST FOREST, ALBERTA, 1972

by

G.J. Smith

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INTRODUCTION

Aerial and ground surveys of mature Engelmann spruce (Picea engelmanni Parry) stands subject to attack by the spruce beetle (Dendroctonus rufipennis Kirby) in the Crowsnest Forest, were carried out in mid-September and early October of 1972. The objectives of the aerial survey were to examine as many mature spruce stands as possible from the air and record trees showing symptoms of recent spruce beetle attack. The ground surveys were carried out along semi-permanent cruise lines in which the objectives were: (1) to supplement aerial surveys with a ground level examination which would enable detection of beetle attacks not yet visible from the air, (2) to record the incidence of established beetle broods from attacks prior to 1972, (4) to establish beetle population trends during 1972 and potential for 1973.

Ground surveys were conducted in 10 areas in a cross-section of the Crowsnest Forest, all of which had been appraised in previous years and past beetle activity was known.

The information obtained is presented in a different manner this year than in past reports. Since the volume of timber affected has been well documented and has not changed significantly from that of 1971, it was deleted from the results table (Table 1) of the 1972

report. This table, rather than containing figures denoting volume/acre affects, lists current beetle activity on a per tree affected basis in the annually appraised plots. This eliminated the necessity of remeasuring each stem and recalculating the annual volume change in order to assess current impact.

Due to the change in appraisal method in 1972, percentages of attack incidence were not used as a comparison with that of past years. In future, if annual appraisals are continued, the percentage of fluctuation in new attack incidence, can be readily compared with that of 1972.

RESULTS

Table 1 shows the code number and location of each of the cruise lines surveyed and the results in the form of number of currently attacked or infested trees found on each line of plots.

A comparison of 1971 and 1972 results shows that 6 trees were successfully attacked in 1972 and 9 were successfully attacked in 1971, an overall decrease in this category. The unsuccessful attach and currently infested from prior attack categories remained approximately the same. In both years,most of the new attacked affected only a portion of the tree's circumference, hence the remainder of the cambium was undamaged and the trees were not killed.

During the aerial survey and subsequent random spot checks, the only trees observed with yellowing foliage were along upper Dutch Creek and upper Lyall Creek. Both areas were ground checked and on stand cross section examinations, 13 trees in the upper Dutch Creek

area (outside the appraised plots) and 7 in the Lyall Creek area, contained various stages of beetles, some of the trees had green foliage, some had yellowing foliage and others had recently dropped all foliage. In these 2 areas the 1972 attack was light, hence the number of trees that show foliar effects from the air is expected to be considerably less in 1973.

The combined appraisals carried out in 1972 showed an overall decline in new beetle activity in all watersheds except for a slight increase along upper North Racehorse Creek and an unchanged condition in the upper Dutch Creek area.

Although several recently winter-killed spruce trees along Byron Creek were attacked in 1972, it was considered normal, since adult beetles, if present in the area, usually migrate to such material whenever available.

SUMMARY

On the basis of the results of 1972 spruce beetle surveys and appraisals in the Crowsnest Forest, it is apparent that there are presently no known incidents of significant beetle population increases. It is expected that the population trend will remain relatively static again in 1973, unless an unlikely migration of adults were to fly into the area from elsewhere.

The low percentage of attacked trees in the winter-killed spruce along Byron Creek also indicates that beetle populations are low in the area. However, they still maintain the potential for build-up in old declining or predisposed stands. A continuation of

annual surveillance is recommended, particularly in areas where activity was observed in 1972.

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TABLE 1. RESULTS OF APPRAISALS OF SPRUCE BEETLE ACTIVITY, CROWSNEST FOREST, 1972.

Station	*Uninfested in 1972	Attacked in 1972		Currently infested** from attacks Prior to 1972	
		Successful	Unsuccessful		
	Number of living trees per station				
2E - West Castle River	25	--	--	--	
8 - South Castle River	48	--	--	--	
14 - Window Lake Road	44	--	--	--	
16 - N. Racehorse Creek	74	3	1	--	
19 - Divide (betw'n Racehorse & Dutch)	66	--	--	--	
32 - Gardiner Creek	26	1	--	2	(one of these was reattacked in '72)
34 - Gladstone Creek	25	--	--	--	
35 - Cache Creek	96	--	--	--	
37 - Toronado Pass (upper Dutch Crk.)	54	2	2	3	
38 - Bunny Creek	18	--	2	1	
TOTALS	476	6	5	6	

* Includes living trees that had been unsuccessfully attacked prior to 1972.
These trees currently show no adverse effect from prior attack, hence they are considered uninfested.

** Includes living or dying trees that still bear foliage. Dead bare trees were omitted.

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