



AN APPRAISAL OF TIMBER KILLED BY INSECTS 1956 - 1960
INCLUSIVE IN BRITISH COLUMBIA

Compiled by
C.B. Cottrell and R.L. Fiddick

INFORMATION REPORT
FOREST ENTOMOLOGY AND PATHOLOGY LABORATORY
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CANADA
DEPARTMENT OF FORESTRY
FOREST ENTOMOLOGY AND PATHOLOGY BRANCH
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INTRODUCTION

An appraisal of the amount of timber killed by bark beetles of the genus Dendroctonus in Interior British Columbia was multilithed as an Interim Report in April, 1957. It tabulated tree mortality data for the period 1951-1955 inclusive. In general the data were presented as the amount of timber killed on large areas; these were grouped by Forest Biology Ranger (Forest Insect and Disease Survey) districts, and summarized by Forest districts.

The present report includes an appraisal of timber killed by all insect species in British Columbia for the period 1956-1960 inclusive. A supplement at the end of the report includes estimates of timber killed in Coastal districts from 1951 - 1955 inclusive.

The bark beetle data for the Interior districts are based on actual ground and aerial counts of standing red-topped trees. The consensus of opinion of the observers is that, at least in the case of beetle-killed Douglas-fir trees, relatively few escaped their notice, except in the flatter portions of the West Kamloops District where counts were made only from aircraft, and some of the results had to be based on estimates derived from cruise strips. In the Coastal districts the more dense timber stands made individual tree counts impossible. Infested areas were mapped from the air and classified as to intensity of attack and extent. Cruise strips and plots were used to derive estimates on the amount of tree mortality.

The tabulated data in this report are grouped by general area, Laboratory, Ranger districts and Forest districts (Tables 4 to 13). The appendix contains a breakdown by region, compartment, and Forest District to enable the Working Plans Division of the British Columbia Forest Service to use the volume for their stand depletion figures, which is done on a compartment basis. Proximate place names have been applied to describe the compartments. (Tables 14 - 29)

The data presented in this report were obtained by all rangers of the Survey staff. The majority of the damage estimates appear in the Annual Reports of Forest Insect and Disease Rangers. Although all rangers assisted in the preparation, the final compilation was the responsibility of C. B. Cottrell and R. L. Fiddick.

METHODS

Appraisal of Douglas-fir Trees Killed by the Douglas-fir Beetle.

In the Interior individual beetle-killed Douglas-fir trees were counted from vantage points on the ground with the aid of binoculars, and from the air. To determine the number of trees killed in the five year period from 1956 to 1960, counts made in 1961, which were believed to include trees attacked in 1959 and 1960, were added to counts made in 1959 which were believed to include 1956, 1957 and 1958 attacked trees. Beetle-killed Douglas-fir trees usually retain their red foliage for three years but studies of the foliage colour change of trees attacked in the drought year of 1958 indicate that most of these trees lost their foliage quickly and therefore would not have been included in the 1961 count.

The average volume of beetle-killed trees was determined from measurements of 25 killed trees in each large infestation, and smaller numbers of representative trees in the more localized outbreaks. Estimates of volumes of trees counted from aircraft were based on the nearest stand for which figures were known.

It is not known how long beetle-killed Douglas-fir on the Coast retain their needles but it is felt that trees which were "red" in 1961 had been attacked in 1960 or earlier. Red-topped trees were mapped from the air and a number of strips were run in representative areas. Data from these strips were used to compute the volume of timber killed.

Appraisal of Pine Trees Killed by Dendroctonus spp.

In the interior counts of beetle-killed pine were made from vantage points on the ground or from aircraft. On the Coast the method paralleled that used in assessing Douglas-fir beetle damage.

Beetle-killed western white and lodgepole pine trees retain red foliage usually for four years after attack according to empirical observations. Therefore trees with red foliage in 1960 were assumed to have died in the four-year period from 1956 to 1959. Added to these figures were trees known to have been attacked in 1960.

Observations at Alleyne Lake indicate that beetle-killed ponderosa pine trees hold their dead foliage for five years. Therefore trees counted in 1961 were considered killed in the period from 1956 to 1960.

Appraisal of Engelmann Spruce Killed by Dendroctonus spp.

The extent of Engelmann spruce beetle infestations was determined from aircraft. Numerous strips were cruised on foot in each infestation to obtain the percentage of dead spruce, and these figures were applied to the total volume estimates for each area supplied by the British Columbia Forest Service.

The volumes per tree were computed from measurements of a number of beetle-killed trees representative of each major area of infestation.

Appraisal of Ponderosa Pine Killed by Engraver Beetle, Ips spp.

The infestations of Ips were small, few in number and easily accessible. The year of attack is known in each case. The attacked trees were counted and volumes were calculated from measurements of beetle-killed trees.

Appraisal of Alpine Fir Killed by Dryocoetes confusus Sw. in Association with a Disease, Ceratocystis sp.

In the past 10 or more years, vast stands of overmature alpine fir have been killed by the western balsam bark beetle and a lesion-causing disease Ceratocystis sp. Most infestations occurred in inaccessible areas which had to be surveyed from aircraft. The number of trees killed and average

volume per tree are estimates based on sample strips cruised in each Forest Insect and Disease Survey District. In the Central Kamloops District, five strips one chain by 40 chains cruised at McGillivray Lake averaged 36 dead alpine fir per acre and 22 cubic feet per tree. Thirty-five trees per acre, averaging 20 cubic feet per tree, were applied to other infestations in the Central Kamloops District. The average volume per dead alpine fir was 50 cubic feet in strips cruised at Bolean Lake in the East Kamloops District. In the West Nelson District tree volumes were obtained from sample dead trees in the Monashee Pass and in the Granby River Valley. In the Prince George Forest District several strips were cruised along Takla Lake.

Appraisal of Amabilis Fir Killed by Balsam Woolly Aphid 1956-1960 inclusive.

Balsam woolly aphid infestations are known to be present in the area from Coquitlam Lake to Sechelt extending inland to Squamish. The infestation has been appraised from the air for several years and dead trees have been counted. Strips and plots were established in a number of areas to determine the trend of the infestation and the volume of timber affected. Data from these strips were used to compute the volume of timber killed.

Appraisal of Douglas fir and Western Hemlock Killed by the Phantom Hemlock Looper 1956-1957.

Heavy infestations of phantom hemlock looper occurred in a number of municipal and city parks in Vancouver and the lower mainland area in 1956 and 1957. Control measures were undertaken but tree mortality did occur. The number of trees killed and the volume were obtained when the dead trees were removed.

RESULTS

Bark beetles were responsible for considerably more tree mortality than defoliators in the period 1956 to 1960 (Tables 1 and 2). The Douglas-fir beetle was responsible for the greatest loss, both in volume and commercial value since its host, Douglas fir, is the most important commercial tree in British Columbia. Extensive alpine fir mortality caused by Dryocoetes confusus Sw. - Ceratocystis sp. occurred in the Kamloops Forest District. Heavy lodgepole pine mortality occurred in the Prince Rupert District in the Hagan Arm area of Babine Lake. Almost two million cubic feet of spruce were killed by Dendroctonus engelmanni Hopk. in the south-eastern portion of Nelson Forest District, mainly in the Bighorn Creek and Flathead River drainages.

The total volume of merchantable timber killed by bark beetles in the British Columbia interior in the period 1956 to 1960 was almost 24 million cubic feet or 4.75 million cubic feet annually. More than 25 million cubic feet or 5.14 million were killed annually in the Coastal districts. This was an annual loss of almost 10 million cubic feet caused by bark beetles.

Douglas-fir mortality in the Coastal regions is generally less conspicuous than in the Interior. Outbreaks on the Coast are usually confined to smaller areas, and mortality occurs in large groups rather than

scattered trees. In many cases red tops are not visible from the highways and escape notice. This is in contrast to the Interior where large expanses of Douglas-fir stands can be observed from highways and vantage points, and red-tops are very conspicuous.

These figures are considered to be conservative for various reasons; many infested trees were logged before counts were made; in extremely dry years some trees dropped their foliage quickly without changing colour and probably escaped detection; and poor visibility due to smoke from numerous forest fires, such as occurred in 1958, necessitated restricting the aerial survey in the West Kamloops District. Grand fir on Vancouver Island and the lower mainland were killed individually or in small groups but no attempt was made to assess the damage since many were removed in an effort to control the infestations. The figure of 300,000 cubic feet was the volume killed in one small area in a logging company holding.

Dead and dying Douglas fir and white pine have been reported for a number of years on Vancouver Island and lower mainland but a survey was not possible because sufficient flying time was not available.

Table 1

Timber Killed by Bark Beetles in British Columbia, 1956-1960.

Tree species	Coastal B. C.		Interior B. C.		Totals	
	No. trees killed	Volume ^{1/} (cu. ft.)	No. trees killed	Volume (cu. ft.)	No. trees killed	Volume (cu. ft.)
Douglas-fir	235,259	8,343,205	90,066	7,041,291	325,325	15,384,496
Engelmann spruce			28,420	1,951,900	28,420	1,951,900
White spruce	168	21,000			168	21,000
White pine	186,910	6,302,100	10,996	548,345	197,906	6,850,445
Lodgepole pine	342,890	10,286,700	28,284	684,758	371,174	10,971,458
Ponderosa pine			5,388	110,383	5,388	110,383
Grand fir		300,000				300,000
Alpine fir			623,815	13,504,895	623,815	13,504,895
	765,227	25,253,010	786,969	23,841,572	1,552,196	49,094,582

^{1/} The low volume per tree resulted from the small size of the Douglas-fir trees in heavily attacked stands in the South Vancouver District.

Table 2

Number of Trees and Volume by Host Species,
Killed by Defoliators in Coastal British Columbia
1956 - 1960.

Tree species	No. trees killed	Volume (cu. ft.)
Amabilis fir	8,341	2,366,915
Douglas fir	176	13,100
Western hemlock	<u>216</u>	<u>16,700</u>
Totals	8,733	2,396,715

Table 3

Comparison of Volumes of Timber Killed by Beetles
in Interior British Columbia for period
1951 - 1955 and 1956 - 1960.

Tree species	1951 - 1955 * ^{W3}	1956 - 1960
Douglas-fir	9,364,370	7,041,291
Engelmann spruce	9,176,640 ^(250,000)	1,951,900 ⁵⁵²⁷⁰
White pine	4,489,960	548,345
Lodgepole pine	6,690,260	684,758
Ponderosa pine	193,700	110,383
Alpine fir	<u>19,552,700</u>	<u>13,504,895</u>
Totals	49,467,630	23,841,572

* Does not contain figures used in the supplement to this report.

Table 4

Douglas-fir Killed by Douglas-fir Beetle, 1956-60.

District and locality	No. trees killed	Total volume (cu. ft.)
KAMLOOPS FOREST DISTRICT		
West Kamloops		
Cariboo (Lac la Hache)	20,321	1,560,166
Cariboo (Clinton)	7,232	505,463
Chilcotin	26,034	2,180,984
Quesnel Lake	4,954	365,488
Bridge River	<u>779</u>	<u>54,530</u>
	59,320	4,666,631
Central Kamloops		
Tranquille For. Res.	1,836	191,550
Arrowstone Hills	1,156	104,040
Niskonlith For. Res.	2,370	193,250
Long Lake For. Res.	736	29,570
Monte Hills For. Res.	1,491	76,110
Highland Valley	1,304	105,570
Nicola Valley	<u>1,242</u>	<u>96,990</u>
	10,135	797,080
East Kamloops		
Shuswap Lake	463	26,830
Mabel Lake	974	56,245
Monte Lake	3,503	219,190
Okanagan Valley	1,612	87,360
Princeton	<u>642</u>	<u>36,370</u>
	7,194	425,995
Totals for Kamloops F. D.	<u>76,649</u>	<u>5,889,706</u>
NELSON FOREST DISTRICT		
West Nelson		
Kettle Valley	1,345	78,895
Lower Columbia Valley	<u>32</u>	<u>2,060</u>
	1,377	80,955
Central Nelson		
Columbia Valley (NW)	6	330
Laardeau River	118	9,440
Slocan Valley	<u>591</u>	<u>41,985</u>
	715	51,755

Table 4 - continued

District and locality	No. trees killed	Total volume (cu. ft.)
East Nelson		
Columbia Valley (NE)	172	10,320
Windermere Valley	187	11,220
Elk River Valley	<u>433</u>	<u>25,980</u>
	792	47,520
Totals for Nelson F. D.	<u>2,884</u>	<u>180,230</u>
PRINCE GEORGE FOREST DISTRICT		
South Prince George		
Fraser River (Quesnel)	9,830	921,800
Upper Fraser River	<u>23</u>	<u>1,955</u>
	9,853	923,755
West Prince George		
Stuart Lake	<u>680</u>	<u>47,600</u>
	680	47,600
Totals for Prince George Forest District	<u>10,533</u>	<u>971,355</u>
Totals for Interior B. C.	<u>90,066</u>	<u>7,041,291</u>
VANCOUVER FOREST DISTRICT		
South Vancouver		
Silverhope Creek	62,750	2,133,500
Lower Skagit River	110,520	3,757,700
Hope-Anderson River	<u>61,834</u>	<u>2,349,705</u>
	235,104	8,240,905
North Vancouver		
Pender Harbour	<u>155</u>	<u>102,300</u>
	155	102,300
Totals for Vancouver Forest District	<u>235,259</u>	<u>8,343,205</u>
Totals for B. C.	<u>325,325</u>	<u>15,384,496</u>

Table 5

Engelmann Spruce Killed by Engelmann Spruce Beetle, 1956-60

District and locality	No. trees killed	Total volume (cu. ft.)
KAMLOOPS FOREST DISTRICT		
East Kamloops		
Okanagan Valley	200	14,000
Similkameen Valley	<u>80</u>	<u>16,000</u>
	280	30,000
Total for Kamloops F. D.	<u>280</u>	<u>30,000</u>
NELSON FOREST DISTRICT		
West Nelson		
Kootenay Lake	<u>300</u>	<u>18,900</u>
	300	18,900
East Nelson		
Windermere Valley	260	13,520
Gold Creek Valley	5,120	337,920
Elk River Valley	16,340	1,068,080
Flathead Valley	<u>6,120</u>	<u>483,480</u>
	27,840	1,903,000
Total for Nelson F. D.	<u>28,140</u>	<u>1,921,900</u>
Totals for Interior B. C.	<u>28,420</u>	<u>1,951,900</u>
White Spruce Killed by Alaska Spruce Beetle, 1956-60		
PRINCE RUPERT FOREST DISTRICT		
East Prince Rupert		
Smithers	<u>168</u>	<u>21,000</u>
	168	21,000
Totals for British Columbia	<u>28,588</u>	<u>1,972,900</u>

Table 6

White Pine Killed by Mountain Pine Beetle, 1956-60.

District and locality	No. trees killed	Total volume (cu. ft.)
KAMLOOPS FOREST DISTRICT		
Central Kamloops		
N. Thompson Valley	420	33,303
Adams Valley (W)	<u>380</u>	<u>36,100</u>
	800	69,403
East Kamloops		
Adams Valley (E)	72	4,320
Shuswap Lake	204	12,640
Mabel Lake	1,724	93,040
Manning Park	<u>800</u>	<u>32,000</u>
	2,800	142,000
Totals for Kamloops F. D.	<u>3,600</u>	<u>211,403</u>
NELSON FOREST DISTRICT		
West Nelson		
Kettle Valley	14	1,232
Lower Arrow Lake	180	12,780
Kootenay Lake (S)	<u>34</u>	<u>2,992</u>
	228	17,004
Central Nelson		
Columbia Valley (NW)	434	28,058
Upper Arrow Lake	5,711	254,966
Lardeau River	95	4,235
Slocan Valley	360	12,960
Kootenay Lake (N)	<u>81</u>	<u>2,187</u>
	6,681	302,406
East Nelson		
Columbia Valley (NE)	<u>487</u>	<u>17,532</u>
	487	17,532
Totals for Nelson Forest District	<u>7,396</u>	<u>336,942</u>
Totals for Interior B. C.	<u>10,996</u>	<u>548,345</u>

Table 6 - continued

District and locality	No. trees killed	Total volume (cu. ft.)
VANCOUVER FOREST DISTRICT		
South Vancouver		
Silverhope Creek	63,075	2,153,500
Skagit River	113,730	3,810,000
Hope-Boston Bar	9,655	323,530
Birkenhead Lake-		
Blackwater Lake	<u>450</u>	<u>15,075</u>
	186,910	6,302,105
Totals for Vancouver Forest District	<u>186,910</u>	<u>6,302,105</u>
Totals for British Columbia	<u>197,906</u>	<u>6,850,450</u>

Table 7

Lodgepole Pine Killed by Mountain Pine Beetle, 1956-60.

District and locality	No. trees killed	Total volume (cu. ft.)
KAMLOOPS FOREST DISTRICT		
West Kamloops		
Cariboo	<u>750</u>	<u>22,500</u>
	750	22,500
Central Kamloops		
Highland Valley	74	1,615
Long Lake For. Res.	20	400
Monte Hills For. Res.	6,500	143,000
Arrowstone Hills	<u>45</u>	<u>1,260</u>
	6,639	146,275
East Kamloops		
Monte Lake	180	1,800
Mabel Lake	50	1,500
Similkameen Valley	<u>50</u>	<u>1,500</u>
	280	4,800
Totals for Kamloops F. D.	<u>7,669</u>	<u>173,575</u>
NELSON FOREST DISTRICT		
West Nelson		
Kettle Valley	<u>1,919</u>	<u>63,937</u>
	1,919	63,937
Central Nelson		
Columbia Valley (NW)	<u>150</u>	<u>4,950</u>
	150	4,950
East Nelson		
Columbia Valley (NE)	289	5,306
Windermere Valley	510	7,140
Kootenay Valley	6,455	90,370
Gold Creek Valley	<u>10</u>	<u>1,400</u>
	7,264	104,216
Totals for Nelson F. D.	<u>9,333</u>	<u>173,103</u>

Table 7 - continued

District and locality	No. trees killed	Total volume (cu. ft.)
PRINCE GEORGE FOREST DISTRICT		
South Prince George		
Fraser River (Quesnel)	38	760
Fraser River(Prince George)	<u>20</u>	<u>600</u>
	58	1,360
West Prince George		
Stuart Lake	989	29,670
Takla Lake	<u>10,235</u>	<u>307,050</u>
	11,224	336,720
Totals for Prince George Forest District	<u>11,282</u>	<u>338,080</u>
Totals for Interior B. C.	<u>28,284</u>	<u>684,758</u>
PRINCE RUPERT FOREST DISTRICT		
West Prince Rupert*		
Hagan Arm	<u>342,890</u>	<u>10,286,700</u>
	342,890	10,286,700
Totals for Prince Rupert Forest District	<u>342,890</u>	<u>10,286,700</u>
Totals for B. C.	<u>371,174</u>	<u>10,971,458</u>

* Some of the kill in this area dates back to 1955 but had not been included in previous damage appraisal reports.

Table 8

Ponderosa Pine Killed by Dendroctonus spp., 1956-60.

District and locality	No. trees killed	Total volume (cu. ft.)
KAMLOOPS FOREST DISTRICT		
West Kamloops		
Cariboo (Clinton)	<u>39</u>	<u>3,930</u>
	39	3,930
Central Kamloops		
Thompson Valley	266	10,204
S. Thompson Valley	<u>281</u>	<u>16,650</u>
	547	26,854
East Kamloops		
Monte Lake	275	24,750
Similkameen Valley	<u>34</u>	<u>3,740</u>
	309	28,490
Totals for Kamloops Forest District	<u>895</u>	<u>59,274</u>
Totals for Interior B. C.	<u>895</u>	<u>59,274</u>

Table 9
Ponderosa Pine Killed by Engraver Beetles, 1956-60

District and locality	No. trees killed	Total volume (cu. ft.)
KAMLOOPS FOREST DISTRICT		
West Kamloops		
Cariboo (Clinton)	<u>50</u>	<u>500</u>
	50	500
Central Kamloops		
N. Thompson Valley	600	12,000
S. Thompson Valley	110	1,100
Douglas Lake	<u>2,300</u>	<u>25,300</u>
	3,010	38,400
East Kamloops		
Okanagan Valley	<u>1,130</u>	<u>11,300</u>
	1,130	11,300
Totals for Kamloops Forest District	<u>4,190</u>	<u>50,200</u>
NELSON FOREST DISTRICT		
West Nelson		
Kettle Valley	<u>303</u>	<u>909</u>
	303	909
Totals for Nelson Forest District	<u>303</u>	<u>909</u>
Totals for Interior B. C.	<u>4,493</u>	<u>51,109</u>

Table 10

Alpine Fir Killed by Western Balsam Bark Beetle, 1956-60

District and locality	No. tree killed	Total volume (cu. ft.)
KAMLOOPS FOREST DISTRICT		
Central Kamloops		
N. Thompson Valley	100,275	2,005,500
Clearwater Valley	17,850	357,000
Adams Valley	87,510	1,750,200
Niskonlith For. Res.	<u>366,075</u>	<u>7,926,300</u>
	571,710	12,039,000
East Kamloops		
Shuswap Lake	3,270	163,500
Mabel Lake	15,360	307,200
Okanagan Valley	<u>800</u>	<u>16,000</u>
	19,430	486,700
Totals for Kamloops F. D.	<u>591,140</u>	<u>12,525,700</u>
NELSON FOREST DISTRICT		
West Nelson		
Kettle Valley	3,975	120,075
Lower Columbia Valley	<u>200</u>	<u>8,200</u>
	4,175	128,275
Total for Nelson F. D.	<u>4,175</u>	<u>128,275</u>
PRINCE GEORGE FOREST DISTRICT		
South Prince George		
Fraser River (Quesnel)	<u>135</u>	<u>2,565</u>
	135	2,565
West Prince George		
Stuart Lake	365	9,855
Takla Lake	<u>500</u>	<u>13,500</u>
	865	23,355
North Prince George		
Pine Pass	<u>27,500</u>	<u>825,000</u>
	27,500	825,000
Totals for Prince George F. D.	<u>28,500</u>	<u>850,920</u>
Totals for Interior B. C.	<u>623,815</u>	<u>13,504,895</u>

Table 11

Amabilis Fir Killed by Balsam Woolly Aphid 1956-60.

District and locality	No. trees killed	Total volume (cu. ft.)
VANCOUVER FOREST DISTRICT		
South Vancouver		
Howe Sound -		
North Shore	6,787	2,070,500
Squamish	<u>255</u>	<u>56,100</u>
	7,042	2,126,600
North Vancouver		
Sechelt Peninsula	<u>1,299</u>	<u>240,315</u>
	1,299	240,315
Totals for Vancouver Forest District	<u>8,341</u>	<u>2,366,915</u>

Table 12

Douglas-fir and Western Hemlock Killed by the
Phantom Hemlock Looper 1956- 1957.

District and locality	No. trees killed	Total volume (cu. ft.)
VANCOUVER FOREST DISTRICT		
South Vancouver		
Vancouver	F 18	1,960
New Westminster	F 158	11,140
	H 216	16,700
Totals	F 176	13,100
	H 216	<u>16,700</u>
	392	29,800

Table 13

Grand Fir Killed by the Fir Engraver Beetle

Scolytus ventralis Lec. 1958-1959

District and locality	No. trees killed	Total volume (cu. ft.)
VANCOUVER FOREST DISTRICT		
South Vancouver Island		
Copper Canyon		300,000

A P P E N D I X

Table 14

Douglas-fir Trees Killed by Douglas-fir Beetle,
Dendroctonus pseudotsugae, Hopk. 1956-1960.

Region	Comp.	Location	No. trees killed	Volume per tree (cu. ft.)	Total volume (cu. ft.)	
KAMLOOPS FOREST DISTRICT						
12	13	Skaist Creek	40	60	2,400	
			40		2,400	
13	40	Hayes Creek	12	60	720	
	45	Missezula Lake	60		3,600	
	46	Summers Creek	80		4,800	
	49	Allison Lake	55		3,300	
	50	Allison Creek	40		2,400	
	51	Hardwick Creek	30		40	1,200
	53	Mt. Darcy	60		2,400	
	56	Stevenson Creek	35		50	1,750
	59	Copper Mtn.	60		60	3,600
	63	Copper Creek	15		900	
	67	Manning Park	14		840	
	75	Thalia Lake	26		1,560	
77	Bluey Lake	85	5,100			
79	Brookmere	30	1,800			
			602		33,970	
14	14	Allen Grove	180	50	9,000	
	15	Shingle Creek	30	60	1,800	
	29	Peachland Creek	40	2,400		
	36	Mission Creek	10	600		
	37	Belgo Creek	40	2,400		
	44	Bear Creek	288	40	11,520	
	45	Lambly Creek	80	3,200		
	46	Winfield	30	60	1,800	
	49	Bardolph Lake	200	65	13,000	
	52	Shorts Creek (E)	199	60	11,940	
	55	Whiteman Creek	16	960		
	58	Equesis Creek	67	4,020		
	59	Pinaus Lake	312	18,720		
62	Lumby	120	50	6,000		
		1,612		87,360		
25	9	Logan Creek	6	70	420	
	14	Lindley Creek	125	8,750		
	16	Coldwater Valley (N)	21	80	1,680	
	17	Kane Valley (E)	191	15,280		
	18	Kane Valley (W)	83	6,640		
	19	Coldwater Valley (S)	8	640		
	25	Marquart Lake	18	1,440		
	26	Courtney Lake	54	4,320		
	37	Chapperon Lake	19	70	1,330	
	41	Stump Lake	85	40	3,400	
	45	Clapperton Creek	226	80	18,080	
48	Guichon Creek (E)	27	2,160			
49	Mamit Lake (E)	84	6,720			
		947		70,860		

Table 14 - continued

Region	Comp.	Location	No. trees killed	Volume per tree (cu. ft.)	Total volume (cu. ft.)
33	6	Texas Creek	40	70	2,800
	7	Riley Creek	46		3,220
	10	Gates River	135		9,450
	11	Anderson Lake (E)	44		3,080
	12	Anderson Lake (W)	424		29,680
	13	Tsee Creek	5		350
	14	Seton Lake	41		2,870
	15	Applespring Creek	35		2,450
	18	Carpenter Lake	9		630
		<u>779</u>		<u>54,530</u>	
34	1	Guichon Creek (W)	43	90	3,870
	2	Mamit Lake (W)	102		9,180
	3	Highland Valley (E)	248		22,320
	4	Tunkwa Lake (W)	172		15,480
	5	Durand Creek (E)	219		8,760
	9	Highland Valley (W)	378		34,020
		<u>1,162</u>		<u>93,630</u>	
35	1	Campbell Creek	341	50	17,050
	2	Campbell Lake	402		20,100
	3	Roche Lake	362		18,100
	4	Dufferin Hill	13		650
	7	Cherry Creek (N)	65		2,600
	8	Cherry Creek (S)	58		2,320
	10	Durand Creek (E)	411		16,440
	11	Chartrand Creek	189		7,560
	13	Mamit Lake (N)	58		5,220
		<u>1,899</u>		<u>90,040</u>	
36	1	Robbins Range	125	50	6,250
	2	Monte Creek	341		17,050
	3	Westwold	185		7,400
	4	Falkland	1,330		79,800
	5	Twig Creek	628		37,680
	6	Woods Lake	662		52,960
	7	Salmon Lake (N)	290		23,200
	8	Salmon Lake (S)	467		37,360
	9	Duck Range	80		3,200
	10	Red Bluffs	160		8,000
		<u>4,268</u>		<u>272,900</u>	
37	6	Chase Creek	100	50	5,000
	7	Squilax	75		3,750
	13	Mara	40		3,600
	17	Three Valley Creek	40		2,000
		<u>255</u>		<u>14,350</u>	

Table 14 - continued

Region	Comp.	Location	No. trees killed	Volume per tree (cu. ft.)	Total volume (cu. ft.)
38	11	Sicamous	82	65	5,330
	13	Mara Lake	40		2,600
	14	Cooke Creek	125		6,250
	15	Brash Creek	45		2,700
	16	Enderby	44		1,760
	18	Hidden Lake	135		6,750
	22	Outlet Creek	50		3,000
	23	Sugar Lake (W)	40		2,400
	26	Woodward Creek	75		4,125
	28	Cherryville	98		5,880
	30	Monashee Creek	35		3,150
	35	Harris Creek	<u>205</u>		<u>12,300</u>
		974	56,245		
43	1	Johnson Lake	255	80	20,400
	2	Adams Lake (W)	<u>147</u>		<u>11,760</u>
		402	32,160		
44	1	Adams Lake (E)	<u>208</u>	60	<u>12,480</u>
			208		12,480
45	1	Louis Lake	85	80	6,800
	2	Robins Lake	94		7,520
	3	Paul Lake	294		23,520
	5	Mt. Lolo	338		27,040
	6	Heffley Lake	217		17,360
	7	Niskonlith Lake	128		10,240
	8	Little Shuswap Lake	36		2,880
	9	Adams Lake (S)	68		5,440
	10	Knouff Lake	130		10,400
	11	Badger Creek	13		1,040
	13	Louis Creek (N)	71		5,680
	14	Louis Creek (S)	122		9,760
	15	Christian Creek	<u>7</u>		<u>560</u>
			1,603		128,240
	46	1	Lac du Bois		116
2		Dairy Creek	54	90	4,860
3		Jamieson Creek	20		1,800
4		Tranquille Creek(S)	560	120	67,200
6		Tranquille Creek(N)	974	100	97,400
9		Carabine Creek	16		1,600
10		Sabiston Creek	55		5,500
11		Criss Creek (S)	22		2,200
12		Deadman River (S)	26	90	2,340
13		Clemes Creek	152		13,680
14		Deadman River (N)	196		17,640
15		Criss Creek (N)	69		6,210
17		Snohoosh Lake	<u>31</u>		<u>2,790</u>
			2,291		232,500

Table 14 - continued

Region	Comp.	Location	No. trees killed	Volume per tree (cu. ft.)	Total volume (cu. ft.)
47	1	Hawks Creek	1,622	68	110,296
	2	Rose Lake	135		9,180
	3	Williams Lake	1,369	85	116,365
	4	150 Mile House	669	70	46,830
	6	San Jose River (N)	1,213	68	82,484
	7	San Jose River (S)	1,097		74,596
	8	Lac la Hache (W)	716	91	65,156
	9	Lac la Hache (E)	768		69,888
	10	Timothy Lake	909	68	61,812
	11	105 Mile	2,040		138,720
	12	Fawn	1,816		123,488
	13	Horse Lake	394		26,792
	14	Deka Lake	50		3,400
	17	Chimney Creek	3,611	85	306,935
	18	Alkali Lake	1,681		142,885
	19	Place Lake	1,743		148,155
	20	Dog Creek (W)	488	68	33,184
	21	Dog Creek (E)	223		15,164
	22	Long Lake	150		10,200
	23	Big Bar Creek	85	70	5,950
	25	Kelly Lake	126		8,820
	26	Clinton	985		68,950
	27	Big Bar Lake	410		28,700
	28	Alberta Lake	51		3,570
	29	Chasm Creek	230		16,100
	30	Bonaparte River	62	67	4,154
	31	70 Mile House	16	75	1,200
	32	Mt. Begbie	15		1,125
	42	Maiden Creek	1,161	70	81,270
	43	Hat Creek	865		60,550
44	Upper Hat Creek	20		1,400	
45	Pavilion Lake	52		3,640	
46	Fountain Valley	36		2,520	
49	Botanie Creek	50		3,500	
52	Oregon Jack Creek	140		9,800	
53	Cornwall Creek	2,170		151,900	
54	Battle Creek	120	90	10,800	
55	Back Valley	165		14,850	
56	Scottie Creek	164		14,760	
57	Loon Creek	385	70	26,950	
58	Hihium Creek	202	90	18,180	
59	Brigade Creek	31		2,790	
			28,235		2,127,009

Table 14 - continued

Region	Comp.	Location	No. trees killed	Volume per tree (cu. ft.)	Total volume (cu. ft.)
48	12	Gaspard Creek	2,000	85	170,000
	16	Farwell Creek	18,000		1,530,000
	55	Riske Creek	3,600		306,000
	56	South Riske Creek	250	76	19,000
	58	Mackin Creek (E)	380		28,880
	59	Knox Lake	580		44,080
	60	Meldrum Creek	196		14,896
	61	Callanan Lake	675		51,300
	62	Mackin Creek	91		6,916
	63	Mackin Creek (W)	262		19,912
			<u>26,034</u>		<u>2,180,984</u>
56	24	Beaver Creek	28	76	2,128
	27	Cedar Creek	36		2,736
	50	McKinley Lake	176		13,376
	51	Hazeltine Creek	352		26,752
	53	Beaver Lake	280		21,280
	54	Horsefly	560		42,560
	57	Horsefly Lake	71		5,396
	59	McKusky Creek	58		4,408
	69	McLeese Lake	<u>1,557</u>		<u>118,332</u>
		<u>3,118</u>		<u>236,968</u>	
57	1	Whitewood Creek	4	90	360
	3	Peterson Creek	15		1,350
	12	Canimrod Creek	30	70	2,100
	13	Jim Creek	300		21,000
	14	Drewry Lake	60		4,200
	15	Buffalo Creek	1,173		82,110
	16	Bradley Creek	253		17,710
	18	Roger Lake	10		700
	21	Mahood Lake	<u>10</u>		<u>700</u>
		<u>1,855</u>		<u>130,230</u>	
58	1	Barriere River	50	90	4,500
	2	N. Barriere Lake	100		9,000
	3	E. Barriere Lake	<u>215</u>		<u>19,350</u>
			<u>365</u>		<u>32,850</u>
		District totals	<u>76,649</u>		<u>5,889,706</u>

Table 14 - continued

Region	Comp.	Location	No. trees killed	Volume per tree (cu. ft.)	Total volume (cu. ft.)
NELSON FOREST DISTRICT					
15	1	McRae Creek	8	60	480
	3	Grand Forks	100	45	4,500
	7	Burrell Creek (N)	6	60	360
	10	Boundary Creek	434	72	31,248
	11	Bridesville	61	60	3,660
	12	Nicholson Creek	78		4,680
	13	Conkle Lake	12	40	480
	14	Paturages Creek	<u>30</u>	60	<u>1,800</u>
		729		47,208	
16	1	Rossland	8	70	560
	2	Sheep Creek	<u>6</u>		<u>420</u>
		14		980	
17	23	Pend d'Oreille River	<u>18</u>	60	<u>1,080</u>
			18		1,080
19	1	Roosville	33	60	1,980
	4	Wigwam River	<u>400</u>		<u>24,000</u>
			433		25,980
21	10	Dutch Creek	65	60	3,900
	26	Whiteswan Lake	<u>122</u>		<u>7,320</u>
			187		11,220
22	4	Enterprise Creek	241	65	15,665
	11	Nemo Creek	27	75	2,025
	12	Silverton Creek	<u>11</u>	60	<u>660</u>
		279		18,350	
23	2	Edgewood	<u>16</u>	60	<u>960</u>
			16		960
24	1	Ouellette Creek	69	40	2,760
	2	Westkettle River(S)	16	60	960
	3	Westkettle River(S)	8		480
	4	Carmi	172	43	7,396
	6	Beaverdell Creek	146	60	8,760
	7	Arlington Lake	132		7,920
	17	State Creek	<u>57</u>	43	<u>2,451</u>
		600		30,727	
39	2	Nakusp Creek	6	55	330
	5	Cape Horn Creek	17		935
	14	Halfway Creek	7		385
	21	Crawford Creek	115	75	8,625
	24	Cranberry Creek	<u>167</u>	80	<u>13,360</u>
		312		23,635	
40	4	Meadow Creek	19	80	1,520
	7	Duncan River (S)	<u>99</u>		<u>7,920</u>
			118		9,440

Table 14 - continued

Region	Comp.	Location	No. trees killed	Volume per tree (cu. ft.)	Total volume (cu. ft.)
41	1	Spillamacheen	112	60	6,720
	35	Blackwater	50		3,000
	48	Blackwater Lake	10		600
			<u>172</u>		<u>10,320</u>
42	9	Downie Creek	6	55	330
			<u>6</u>		<u>330</u>
		District totals	<u>2,884</u>		<u>180,230</u>
PRINCE GEORGE FOREST DISTRICT					
55	1	Deserters Creek	22	76	1,672
	2	Ruric Creek	218		16,568
	3	Lower Narcosli Creek	751		57,076
	4	Upper Narcosli Creek	293		22,268
	5	Twan Creek	109		8,284
	6	Sing Lee Creek	122		9,272
	10	Baker Creek	60		4,560
	19	Whittier Creek	20		1,520
	20	Charleson Creek	15		1,140
	21	West Road River	85		6,460
	22	Sanders Creek	472		35,872
			<u>2,167</u>		<u>164,692</u>
56	1	Whites Landing Cr.	7,138	100	713,800
	2	Lazaroff Lake	137		13,700
	5	Cottonwood River	5		500
	7	Beaverdyke Creek	5	76	380
	19	Australian Creek	43		3,268
	22	Cuisson Creek	335		25,460
			<u>7,663</u>		<u>757,108</u>
59	101	Churchill Mtn.	23		1,955
			<u>23</u>	85	<u>1,955</u>
68	63	Camsell Creek	327	70	22,890
	68	Pope Mtn.	55		3,850
	71	Tsilcoh River	25		1,750
	74	Tezzeron Lake	60		4,200
	86	Stuart Lake (S)	213		14,910
			<u>680</u>		<u>47,600</u>
		District totals	<u>10,533</u>		<u>971,355</u>
		Totals for Interior B. C.	<u>90,066</u>		<u>7,041,291</u>

Table 14 - continued

Region	Comp.	Location	No. trees killed	Volume per tree (cu. ft.)	Total volume (cu. ft.)
VANCOUVER FOREST DISTRICT					
11	1B	Silverhope Creek	10,430	34	354,500
	1D	Silverhope Creek	<u>20,850</u>		<u>709,000</u>
			31,280		1,063,500
12	16	Silverhope Creek	31,470	34	1,070,000
	17	Lower Skagit River	82,890		2,818,275
	18	Lower Skagit River	<u>27,630</u>		<u>939,425</u>
			141,990		4,827,700
26	2	Emory Creek	5,600	38	212,700
	9	North Bend (Scuzzy Cr.)	134		5,100
	10	Nahatlach River	8		325
	14	Nahatlach River	34		1,305
	15	Nahatlach River	9		350
	15	Chaumox	10		375
	15	Nepopulchin Creek	44		1,700
	16	Ainslie Creek	22		850
	17	Stoyama Creek	9,330		354,500
	18	Anderson River	7,775		295,415
	19	Anderson River	23,320		886,255
	21	Anderson River	<u>15,548</u>		<u>590,830</u>
		61,834	2,349,705		
28	27	Pender Harbour	100	66,000	
		Agamemnon Channel	<u>55</u>	<u>36,300</u>	
			155	102,300	
Total for Vancouver Forest District			<u>235,259</u>		<u>8,343,205</u>
Total for B. C.			<u>325,325</u>		<u>15,384,496</u>

Table 15

Spruce Trees Killed by Dendroctonus spp., 1956-1960 Inclusive.

Region	Comp.	Location	No. trees killed	Volume per tree (cu. ft.)	Total volume (cu. ft.)
KAMLOOPS FOREST DISTRICT					
13	65	Lightning Lake	<u>80</u> 80	200	<u>16,000</u> 16,000
14	29	Brenda Lake	<u>200</u> 200	70	<u>14,000</u> 14,000
District totals			<u>280</u>		<u>30,000</u>
NELSON FOREST DISTRICT					
17	21	Monk Creek	<u>300</u> 300	63	<u>18,900</u> 18,900
18	2	Bloom Creek	<u>5,120</u> 5,120	66	<u>337,920</u> 337,920
19	4	Bighorn Creek	15,400	66	1,016,400
	19	Matheson	740	52	38,480
	27	Grave Creek	<u>200</u>	66	<u>13,200</u>
			<u>16,340</u>		<u>1,068,080</u>
20	3	Cabin Creek	<u>6,120</u> 6,120	79	<u>483,480</u> 483,480
21	17	Forster Creek	<u>260</u> 260	52	<u>13,520</u> 13,520
District totals			<u>28,140</u>		<u>1,921,900</u>
Totals for Interior B. C.			<u>28,420</u>		<u>1,951,900</u>
PRINCE RUPERT FOREST DISTRICT					
67	12		168		21,000
Totals for British Columbia			<u>28,588</u>		<u>1,972,900</u>

Table 16

White Pine Trees Killed by Mountain Pine Beetle, 1956-1960 Inclusive

Region	Comp.	Location	No. trees killed	Volume per tree (cu. ft.)	Total volume (cu. ft.)
KAMLOOPS FOREST DISTRICT					
12	13	Skaist Creek	600	40	24,000
	14	Skaist Creek	<u>200</u>		<u>8,000</u>
			800		32,000
37	15	Malakwa	60	60	3,600
	19	Perry River	<u>104</u>		<u>6,240</u>
			164		9,840
38	2	Wap Creek	100	60	6,000
	3	Noisy Creek	130		7,800
	7	Tsuius Creek	370		22,200
	12	Kingfisher Creek	614		36,840
	18	Hidden Lake	80	60	4,800
	20	Star Creek	60	70	4,200
	21	Sitkum Creek	250	16	4,000
	25	Trinity Valley	<u>120</u>	60	<u>7,200</u>
			1,724		93,040
43	2	Adams Lake (W)	65	95	6,175
	5	Momich Lake	60	60	3,600
	11	Adams Lake (N)	315	95	29,925
	12	Adams River (N)	<u>12</u>		<u>720</u>
			452		40,420
44	3	Ross Creek	<u>40</u>	70	<u>2,800</u>
			40		2,800
58	2	N. Barriere Lake	278	76	21,128
	16	Blue River	81	75	6,075
	18	Pyramid	19	100	1,900
	19	Gosnell	<u>42</u>		<u>4,200</u>
			420		33,303
		District totals	<u>3,600</u>		<u>211,403</u>
NELSON FOREST DISTRICT					
15	8	Gable Creek	<u>14</u>	88	<u>1,232</u>
			14		1,232
17	35	Crawford Bay	34	88	2,992
	40	Kaslo River	6	27	162
	42	Davis Creek	<u>75</u>		<u>2,025</u>
			115		5,179

Table 16 - continued

Region	Comp.	Location	No. trees killed	Volume per tree (cu. ft.)	Total volume (cu. ft.)
22	4	Enterprise Creek	150	36	5,400
	11	Nemo Creek	90	39	3,240
	12	Silverton Creek	<u>120</u>	36	<u>4,320</u>
			360		12,960
23	6	Whatshan Lake	80	71	5,680
	7	Fauquier-Arrowpark	<u>100</u>		<u>7,100</u>
			180		12,780
39	2	Nakusp Creek	80	39	3,120
	5	Cape Horn Creek	900		35,100
	6	West Demars	500	28	14,000
	7	Arrowpark Creek	628	39	24,492
	8	Cusson Creek	40	39	1,560
	9	Fosthall Creek	860		33,540
	10	Vanstone Creek	78		3,042
	11	Pingston Creek (S)	50	36	1,800
	12	Pingston Creek (N)	160		5,760
	13	Bannock Creek	120	39	4,680
	14	Halfway Creek	675	94	63,450
	15	Hill Creek	210	39	8,190
	16	Beaton Creek (N)	12		468
	21	Crawford Creek	350	40	14,000
	22	Akolkolex River	370		14,800
25	Cranberry Creek	81		3,240	
26	Blanket Creek	25		1,000	
27	Begbie Creek	560		22,400	
28	St. Leon Creek	<u>12</u>	27	<u>324</u>	
		5,711		254,966	
40	4	Meadow Creek	24	39	936
	5	Duncan Lake	16		624
	7	Duncan River (S)	20	40	800
	14	Healy Creek	5	39	195
	15	Trout Lake	<u>30</u>	56	<u>1,680</u>
		95		4,235	
41	48	Blackwater Lake	140	36	5,040
	49	Bush River	317		11,412
	74	Sentry Mtn.	<u>30</u>		<u>1,080</u>
		487		17,532	
42	1	Illicillewaet River	48	36	1,728
	5	La Forme Creek	10		360
	6	Frisby Creek	223	94	20,962
	9	Downie Creek	28	36	1,008
	21	Encampment Creek	<u>125</u>	32	<u>4,000</u>
		434		28,058	
		District totals	<u>7,396</u>		<u>336,942</u>
		Totals for Interior B. C.	<u>10,996</u>		<u>548,345</u>

Table 16 - continued

Region	Comp.	Location	No. trees killed	Volume per tree (cu. ft.)	Total volume (cu. ft.)
VANCOUVER FOREST DISTRICT					
11	1B	Silverhope Creek	10,735	33.5	359,500
	1D	Silverhope Creek	<u>20,250</u>		<u>719,000</u>
			30,985		1,078,500
12	16	Silverhope Creek	32,090	33.5	1,075,000
	17	Lower Skagit River	85,313		2,858,000
	18	Lower Skagit River	<u>28,417</u>		<u>952,000</u>
			145,820		4,885,000
26	2	Emory Creek	6,438	33.5	215,700
	5	Yale Creek	895		30,000
	6	Spuzzum Mt.	2,238		75,000
	10	Nahatlach River	10		335
	14	Nahatlach River	39		1,305
	15	Nahatlach River	10		335
	16	Ainslee Creek	<u>25</u>		<u>850</u>
			9,655		323,525
27	29	Birkenhead Lake	<u>200</u>	33.5	<u>6,700</u>
			200		6,700
33	10	Blackwater Lake	<u>250</u>	33.5	<u>8,375</u>
			250		8,375
Totals for Vancouver Forest District			<u>186,910</u>		<u>6,302,100</u>
Totals for British Columbia			<u>197,906</u>		<u>6,850,450</u>

Table 17

Lodgepole Pine Trees Killed by Mountain Pine Beetle, 1956-1960 Inclusive.

Region	Comp.	Location	No. trees killed	Volume per tree (cu. ft.)	Total volume (cu. ft.)
KAMLOOPS FOREST DISTRICT					
13	40	Hayes Creek	<u>50</u> 50	30	<u>1,500</u> 1,500
25	38	Range Creek	1,000	22	22,000
	41	Dardanelles Lake	<u>3,000</u> 4,000		<u>66,000</u> 88,000
34	2	Guichon Creek	12	25	300
	3	Highland Valley	15		375
	12	Chataway Creek	<u>47</u> 74	20	<u>940</u> 1,650
35	2	Scuitto Creek	<u>20</u> 20	20	<u>400</u> 400
36	7	Rush Creek	2,500	22	55,000
	8	Salmon Lake (S)	<u>180</u> 2,680	10	<u>1,800</u> 56,800
38	28	Cherryville	20	30	600
	30	Monashee Creek	<u>30</u> 50		<u>900</u> 1,500
47	8	Helena Lake	250 (est.)	30	7,500
	18	Joes Lake	250 "		7,500
	19	Place Lake	250 "		7,500
	56	Scottie Creek	<u>45</u> 795	28	<u>1,260</u> 23,760
		District totals	<u>7,669</u>		<u>173,575</u>
NELSON FOREST DISTRICT					
15	10	Boundary Creek	<u>261</u> 261	33	<u>8,613</u> 8,613
18	7	Teepee Creek	<u>100</u> 100	14	<u>1,400</u> 1,400
21	5	Coyote Creek	3,530	14	49,420
	11	Toby Creek	210		2,940
	16	Forster Creek	100		1,400
	18	Frances Creek	100		1,400
	21	Steamboat Mtn.	100		1,400
	25	Elk Creek	<u>2,925</u> 6,965		<u>40,950</u> 97,510

Table 17 - continued

Region	Comp.	Location	No. trees killed	Volume per tree (cu. ft.)	Total volume (cu. ft.)
22	4	Enterprise Creek	<u>150</u> 150	33	<u>4,950</u> 4,950
24	7	Arlington Lake	40	22	880
	10	Damfino Creek	200		4,400
	12	Mohr Creek	1,168	33	38,544
	14	Bruer Creek	200	46	9,200
	16	Winnifred Creek	<u>50</u> 1,658		<u>2,300</u> 55,324
41	7	Parson	29	14	406
	34	Redgrave	100		1,400
	49	Bush River	<u>250</u> 379		<u>3,500</u> 5,306
		District totals	<u>9,513</u>		<u>173,103</u>
PRINCE GEORGE FOREST DISTRICT					
55	4	Upper Narcosli Creek	8	20	160
	5	Twan Creek	5		100
	10	Higdon Creek	<u>25</u> 38		<u>500</u> 760
59	130	Tabor Creek	<u>20</u> 20	30	<u>600</u> 600
68	63	Camsell Creek	5	30	150
	74	Tezzeron Lake	64		1,920
	83	Kuzkwa River	730		21,900
	88	Nancut	15		450
	99	Kloch Lake	175		5,250
	105	Bivouac Creek	6,198		185,940
	106	Tochcha Lake	2,500		75,000
	107	Sakeniche River	1,374		41,220
	110	Sinta Creek	<u>163</u> 11,224		<u>4,890</u> 336,720
		District totals	<u>11,282</u>		<u>338,080</u>
		Totals for Interior B. C.	<u>28,284</u>		<u>684,758</u>

Table 17 - continued

Region	Comp.	Location	No. trees killed	Volume per tree (cu. ft.)	Total volume (cu. ft.)
PRINCE RUPERT DISTRICT					
66	24	Babine Lake	57,400	30	1,722,000
	29	Babine Lake	84,300		2,529,000
	51	Babine Lake	75,590		2,267,700
	52	Babine Lake	54,600		1,638,000
	53	Babine Lake	<u>71,000</u>		<u>2,130,000</u>
			342,890		10,286,700
Totals for Prince Rupert Forest District					<u>10,286,700</u>
Totals for B. C.			<u>371,174</u>		<u>10,971,458</u>

Table 18

Ponderosa Pine Trees Killed by Dendroctonus spp., 1956-1960 Inclusive

Region	Comp.	Location	No. trees killed	Volume per tree (cu. ft.)	Total volume (cu. ft.)
KAMLOOPS FOREST DISTRICT					
13	40	Hayes Creek	<u>34</u> 34	110	<u>3,740</u> 3,740
25	3	Lytton	<u>17</u> 17	25	<u>425</u> 425
35	1	Robbins Range	20	50	1,000
	2	Pritchard	6		300
	4	Kamloops	<u>208</u>		<u>6,540</u>
			234		7,840
36	8	Salmon Lake (S)	<u>275</u> 275	90	<u>24,750</u> 24,750
45	7	Niskonlith Lake	177	70	12,390
	8	Little Shuswap Lake	<u>68</u>	35	<u>2,380</u>
			245		14,770
46	6	Heffley Creek	10	58	580
	14	Deadman River	<u>41</u>	79	<u>3,239</u>
			51		3,819
47	26	Clinton	9	70	630
	37	Fly Creek	<u>30</u>	110	<u>3,300</u>
			39		3,930
		District totals	<u>895</u>		<u>59,274</u>
		Totals for Interior B. C.	<u>895</u>		<u>59,274</u>

Table 19

Ponderosa Pine Trees Killed by Engraver Beetles, Ips spp., 1956-1960 Inclusive

Region	Comp.	Location	No. trees killed	Volume per tree (cu. ft.)	Total volume (cu. ft.)
KAMLOOPS FOREST DISTRICT					
14	48	Okanagan Centre	<u>170</u> 170	10	<u>1,700</u> 1,700
25	38	Chapperon Lake	<u>2,300</u> 2,300	11	<u>25,300</u> 25,300
37	2	Armstrong	<u>960</u> 960	10	<u>9,600</u> 9,600
45	7	Niskonlith Lake	110	10	1,100
	11	McLure	<u>600</u> 710	20	<u>12,000</u> 13,100
47	44	Upper Hat Creek	<u>50</u> 50	10	<u>500</u> 500
		District totals	<u>4,190</u>		<u>50,200</u>
NELSON FOREST DISTRICT					
15	2	Sandner Creek	48	3	144
	3	Grand Forks	45		135
	10	Boundary Creek	60		180
	13	Conkle Lake	<u>150</u> 303		<u>450</u> 909
		District totals	<u>303</u>		<u>909</u>
		Totals for Interior B. C.	<u>4,493</u>		<u>51,109</u>

Table 20

Alpine Fir Trees Killed by Western Balsam Bark Beetle, Dryocoetes confusus Sw., in Association with a Forest Disease, Ceratocystis sp., 1956-1960 Inclusive

Region	Comp.	Location	Est. no. trees killed	Est. vol. per tree (cu. ft.)	Est. total volume (cu. ft.)
KAMLOOPS FOREST DISTRICT					
14	53	Shorts Creek (W)	200	20	4,000
	54	Bouleau Creek	400		8,000
	55	Whiteman Creek	200		4,000
			<u>800</u>		<u>16,000</u>
37	5	Bolean Lake	<u>2,520</u>	50	<u>126,000</u>
			2,520		126,000
38	22	Cherry Ridge	<u>15,360</u>	20	<u>307,200</u>
			15,360		307,200
43	12-15	Adams River	<u>13,650</u>	20	<u>273,000</u>
			13,650		273,000
40	4	Scotch Creek	<u>750</u>	50	<u>37,500</u>
			750		37,500
45	6, 10,	Knouff Lake	63,675	20	1,273,500
	7, 8, 15	McGillvray Lk.	<u>302,400</u>	22	<u>6,652,800</u>
			366,075		7,926,300
57	1	Jamieson Creek	47,350	20	947,000
	2	Skull Creek	45,650		913,000
	3	Peterson Creek	7,050		141,000
	4	Tsintsunko Lake	225		4,500
	10	Sock Lake	5,250		105,000
	25-27	Murtle Lake	<u>12,600</u>		<u>252,000</u>
			118,125		2,362,500
58	1	Johnson Lake	39,900	20	798,000
	2	N. Barriere Lake	240		4,800
	3	E. Barriere Lk.	33,675		673,500
	5	Fennel Creek	45		900
			<u>73,860</u>		<u>1,477,200</u>
		District totals	<u>591,140</u>		<u>12,525,700</u>
NELSON FOREST DISTRICT					
15	8	Gable Creek	350	29	10,150
	9	Upper Granby River	<u>925</u>		<u>26,825</u>
			1,275		36,975
23	3	Inonoaklin River	<u>200</u>	41	<u>8,200</u>
			200		8,200

Table 20 - continued

Region	Comp.	Location	Est. no. trees killed	Est. vol. per tree (cu. ft.)	Est. total volume (cu. ft.)
24	15	Upper Kettle River	400	41	16,400
	16	Winnifred Creek	<u>2,300</u>	29	<u>66,700</u>
			<u>2,700</u>		<u>83,100</u>
		District totals	<u>4,175</u>		<u>128,275</u>
PRINCE GEORGE FOREST DISTRICT					
56	1	Whites Landing Creek	15	19	285
	2	Nelsonkenny Creek	<u>90</u>		<u>1,710</u>
			105		1,995
59	140	Hixon Creek (W)	<u>30</u>	19	<u>570</u>
			30		570
68	82	Grostete Creek	140	27	3,780
	85	Tarnezell Creek	160		4,320
	88	Nancut	65		1,755
	99	Kloch Lake	80		2,160
	100	Takatoot Lake	15		405
	103	Baptiste Creek	150		4,050
	104	Bill Martin Ridge	200		5,400
	110	Sinta Creek	<u>55</u>		<u>1,485</u>
			865		23,355
70	44	Mt. West	5,500	30	165,000
	45	John Bennett Creek	4,000		120,000
	47	Garbitt Creek	15,250		457,500
	48	Silver Sands Creek	<u>2,750</u>		<u>82,500</u>
			27,500		825,000
		District totals	<u>28,500</u>		<u>850,920</u>
Totals for					
Interior B. C.					<u>623,815</u>
					<u>13,504,895</u>

Supplement to " Preliminary Report on
Appraisal of the Amount of Timber Killed
by Bark Beetles of the genus Dendroctonus,
Interior B. C." by D. A. Ross, (1957)

Table 21

Amabilis Fir Trees Killed by Balsam Woolly Aphid, Adelges piceae Ratz.,
1956 - 1960 Inclusive

Region	Comp.	Location	No. trees killed	Volume per tree (cu. ft.)	Total volume (cu. ft.)
VANCOUVER FOREST DISTRICT					
9	10	North Alouette River	70	250	17,500
	34	De Beck Creek	65		16,250
	35,38,40				
	42, 46	Pitt River	44		11,000
	62	Coquitlam Lake	210		52,500
	63	Coquitlam R. and Lk.	430		107,500
	67	Seymour Mt.	840		210,000
	72,74,76	Indian River	500		125,000
	77	Seymour River	235	365	85,775
	78	Seymour R (Reservoir)	640		233,600
	78	Seymour River	755	250	188,750
	82	Capilano River	340		85,000
	85	Cypress Creek	2,375	365	866,875
	89	Furry Creek	105	250	26,250
	90	Britannia Creek	38		9,500
	92	Stawamus River	140		35,000
			<u>6,787</u>		<u>2,070,500</u>
27	2	Raffuse Creek	185	220	40,700
	5	Mamquam River	70		15,400
			<u>255</u>		<u>56,100</u>
28	3	Mill Creek	235	185	43,475
	3	Woodfibre Creek	225		41,625
	4	Potlach Creek	180		33,300
	4	Sechelt Creek	138		25,530
	4	McNab Creek	75		13,875
	5	Rainy River	260		48,100
	9	McNair Creek	46		8,510
	9	Dakota Creek	140		25,900
			<u>1,299</u>		<u>240,315</u>
Totals for Vancouver Forest District					<u>8,341</u>
Totals for B. C.					<u>8,341</u>
					<u>2,366,915</u>
					<u>2,366,915</u>

INTRODUCTION

The Interim Report of April, 1957, did not include any tree mortality figures for Coastal British Columbia. This supplementary report includes the available data on trees killed by insects in the Coastal region for the period 1951 - 1955 inclusive, as well as notes on some mortality which occurred prior to 1951. Also presented in this section is tree mortality data for the Interior which were not available when the first report was prepared in 1957. Therefore, none of the data present in this supplement have been published previous to now.

Methods used in the Interior for counting trees and estimating volumes are the same as those described in "A Quantitative Appraisal of Timber Killed by Insects British Columbia"(1962) with several exceptions. The volume of timber killed by Douglas-fir beetle at Farwell Creek was estimated by the B. C. Forest Service at 7,000,000 cu. ft. Two million cu. ft. were believed to have been killed by beetles between 1956 and 1960, and 5,000,000 cu. ft. between 1952 and 1955. Three million cu. ft. of this latter amount was thought to have been killed by unfavourable climatic conditions. In the Nimpkish River Valley on Vancouver Island the Douglas-fir beetle killed 11,000,000 cu. ft. of prime Douglas-fir. This is a cruise figure supplied by company foresters in the area. Near Cumberland an estimated 2,000,000 cu. ft. of Douglas-fir were killed in 1953 as a result of a population build-up in felled and bucked timber.

Defoliators were active during the 1950's but caused no widespread tree mortality. During the 1940's several severe infestations occurred on the Coast. Black-headed budworm infestations were recorded on Vancouver Island and the mainland from 1941 to 1945, and were responsible for the death of an estimated half billion board feet of timber in the Sayward area in the Salmon and White river drainages. The hemlock looper killed an estimated one-half billion board feet of timber on Vancouver Island in the Caycuse, Nitinat, Klanawa, and Sarita river drainages between 1944 and 1946. Severe hemlock looper defoliation caused tree mortality estimated at several million board feet on the mainland at Rainy River near Port Mellon and Widgeon Creek at the south end of Pitt Lake. The above estimates of tree mortality were not tabulated as it was impossible to present the figures by drainages and compartments.

Table 22
Douglas-fir Beetle, 1951-55

Region	Comp.	Location	No. trees killed	Volume per tree (cu. ft.)	Total volume (cu. ft.)
KAMLOOPS FOREST DISTRICT					
48	12	Gaspard Creek	3,500	85	297,500
	16	Farwell Creek	17,700		1,504,500
	17	Big Creek	<u>2,300</u>		<u>195,500</u>
			23,500		1,997,500
		District totals	<u>23,500</u>		<u>1,997,500</u>
PRINCE GEORGE FOREST DISTRICT					
59	101	Churchill Mtn.	<u>200</u>	76	<u>15,200</u>
			200		15,200
68	63	Camsell Creek	145	70	10,150
	68	Pope Mtn.	325		22,750
	71	Tsilcoh River	300		21,000
	74	Tezzeron Lake	250		17,500
	86	Stuart Lake (S)	<u>188</u>		<u>13,100</u>
			1,208		84,560
		District totals	<u>1,408</u>		<u>97,760</u>
		Totals for Interior B. C.	<u>24,908</u>		<u>2,095,260</u>
VANCOUVER FOREST DISTRICT					
3	5 F)			
2	34, 35, 36,) Nimpkish			11,000,000
	37, 29, 20) River			
	26, 27, 21,) Valley			
	19, 16)			
7	7 A	Cumberland			<u>2,000,000</u>
					13,000,000
		Totals for Vancouver Forest District			<u>13,000,000</u>
		Totals for B. C.			<u>15,095,260</u>

Table 23
Engelmann Spruce Beetle, 1951-55

Region	Comp.	Location	No. trees killed	Volume per tree (cu. ft.)	Total volume (cu. ft.)
NELSON FOREST DISTRICT					
17	1	Camp Run Creek	2,065 (est.)	62	128,030
	10	Mt. Rykerts	200 (est.)	63	12,600
	21	Crutch Creek	2,565		161,600
	22	Archibald Creek	100 (est.)		6,300
			<u>4,930</u>		<u>308,530</u>
18	2	Bloom Creek	<u>17,800</u>	50	<u>898,000</u>
			17,800		898,000
19	4	Bighorn Creek	20,660	50	1,033,000
	19	Matheson Creek	340		17,000
			<u>21,000</u>		<u>1,050,000</u>
20	3	Storm-Cabin Cr.	<u>107,640</u>	40	<u>5,382,000</u>
			107,640		5,382,000
		District totals	<u>151,370</u>		<u>7,638,530</u>
		Totals for Interior B. C.	<u>151,370</u>		<u>7,638,530</u>

Table 24
Alaska Spruce Beetle, 1943-48

Region	Comp.	Location	No. trees killed	Volume per tree (cu. ft.)	Total volume (cu. ft.)
PRINCE GEORGE FOREST DISTRICT AND YUKON					
81	12	Blanchard River	27,756	20	555,120
	27	Nadahini Creek	22,248		444,960
	28	Goldrun Creek	9,234		184,680
	29	Stanley Creek	3,456		69,120
	30	Talbot Creek	2,079		41,580
	53	Kwatini Creek	<u>36,288</u>		<u>725,760</u>
			101,061		2,021,220
YUKON (Region and Compartment numbers not available)					
		Haines Road Mile 93-133	<u>1,475,000</u>	20	<u>29,500,000</u>
			1,475,000		29,500,000
		Totals for Interior B. C. and Yukon	<u>1,576,061</u>		<u>31,521,220</u>

Table 25
Alaska Spruce Beetle, 1951-55

Region	Comp.	Location	Est. no. trees killed	Volume per tree (cu. ft.)	Est. total volume (cu. ft.)
PRINCE GEORGE FOREST DISTRICT					
59	31	Ptarmigan Creek	200	81	16,200
	33	Redmountain Creek	400		32,400
	62	Slim Creek	1,000		81,000
	65	Hungary Creek	200	94	16,200
	68	Kenneth Creek	300		24,300
	69	Sinclair Mills	500		47,000
	92	Aleza Lake	800		64,800
			<u>3,400</u>		<u>281,900</u>

Table 26

White Pine Killed by Mountain Pine Beetle, 1951-55

Region	Comp.	Location	No. trees killed	Volume per tree (cu. ft.)	Total volume (cu. ft.)
NELSON FOREST DISTRICT					
41	49	Bush River	<u>535</u>	36	<u>19,260</u>
			535		19,260
		District totals	<u>535</u>		19,260
Lodgepole Pine Killed by Mountain Pine Beetle, 1951-55					
NELSON FOREST DISTRICT					
24	12	Mohr Creek	300	46	13,800
	14	Bruer Creek	100		4,600
	16	Winnifred Creek	<u>80</u>		<u>3,680</u>
			480		22,080
		District totals	<u>480</u>		<u>22,080</u>
PRINCE GEORGE FOREST DISTRICT					
55	4	Upper Marcosli Creek	560	20	11,200
	10	Higdon Creek	900		18,000
	13	Puntchesakut Lake	<u>50</u>		<u>1,000</u>
			1,510		30,200
68	83	Kuzkwa River	9,600	30	288,000
	101	Leo Creek	30,700		921,000
	104	Bill Martin Ridge	12,400		372,000
	105	Bivouac Creek	6,100		183,000
	106	Tochcha Lake	24,600		738,000
	107	Sakeniche River	18,500		555,000
	109	Takla Narrows	12,200		366,000
	110	Sinta Creek	<u>18,400</u>		<u>552,000</u>
			132,500		3,975,000
		District totals	<u>134,010</u>		<u>4,005,200</u>
		Totals for Interior B. C.	<u>134,490</u>		<u>4,027,280</u>

Table 27

Alpine Fir Killed by Western Balsam Bark Beetle in Association
with a Forest Disease, Ceratocystis sp., 1948-55

Region	Comp.	Location	Est. acres	Est. vol. per acre (cu. ft.)	Est. total volume (cu. ft.)
KAMLOOPS FOREST DISTRICT					
14	63	Aberdeen Lake	<u>5,000</u> 5,000	100	<u>500,000</u> 500,000
37	14	Yard Creek	<u>4,480</u> 4,480	600	<u>2,688,000</u> 2,688,000
38	11	Sicamous Creek	<u>320</u> 320	200	<u>64,000</u> 64,000
43	-	Adams River	<u>910</u> 910	700	<u>637,000</u> 637,000
45	-	McGillivray Lake	12,600	792	9,979,200
		Knouff Lake	<u>2,700</u> 15,300	700	<u>1,890,000</u> 11,869,200
57	-	Jamieson Creek	3,150	700	2,205,000
	-	Whitewood Creek	3,500		2,510,000
	-	Sock Lake	350		245,000
		Murtle Lake	<u>840</u> 7,840		<u>588,000</u> 5,548,000
58	-	Barriere Lake	2,240	700	1,568,000
	-	Johnson Lake	<u>2,660</u> 4,900		<u>1,862,000</u> 3,430,000
		District totals	<u>38,750</u>		<u>24,748,200</u>
24	8	W Kettle River	10,240	375	3,840,000
	10	Damfino Creek	<u>1,280</u> 11,520	200	<u>256,000</u> 4,096,000
39	11	Ledge Creek	1,000	300	300,000
	12	Pingston Creek	<u>1,280</u> 2,280		<u>384,000</u> 684,000
		District totals	<u>13,800</u>		<u>4,780,000</u>

Table 27 - continued

Region	Comp.	Location	Est. acres	Est. vol. per acre (cu. ft.)	Est. total volume (cu. ft.)
PRINCE GEORGE FOREST DISTRICT					
56	2	Nelsonkenny Creek	<u>20</u> 20	190	<u>3,800</u> 3,800
59	2	Grant Brook	450	180	81,000
	4	Moose Lake	<u>150</u> 600		<u>27,000</u> 108,000
68	82	Grostete Creek	510	270	137,700
	85	Tarnzell Creek	270		72,900
	88	Nancut	320		86,400
	99	Kloch Lake	520		140,400
	100	Takatoot Lake	770		207,900
	103	Baptiste Creek	760		205,200
	104	Bill Martin Ridge	260		70,200
	105	Bivouac Creek	130		35,100
	107	Sakeniche River	250		67,500
	110	Sinta Creek	<u>2,300</u> 6,090		<u>621,000</u> 1,644,300
		District totals	<u>6,710</u>		<u>1,756,100</u>
		Totals for Interior B. C.	<u>59,260</u>		<u>31,284,300</u>

Table 28
 Douglas-fir Killed by Douglas-fir Tussock Moth,
 1946 - 1948 Inclusive

Region	Comp.	Location	No. trees killed	Volume per tree (cu. ft.)	Total volume (cu. ft.)
KAMLOOPS FOREST DISTRICT					
25	41	Stump Lake	<u>35</u> 35	19	<u>665</u> 665
34	5	Durand Creek	400	4	1,600
	6	Walhachin	500	10	5,000
	7	Barnes Lake	<u>200</u>		<u>2,000</u>
			1,100		8,600
35	3	Roche Lake	850	10	8,500
	4	Dufferin Hill	<u>100</u>		<u>1,000</u>
			950		9,500
36	1	Robbins Range	1,000	10	10,000
	3	Westwold	50	4	200
	9	Duck Range	<u>2,000</u>		<u>8,000</u>
			3,050		18,200
45	3	Paul Lake	250	10	2,500
	11	Badger Creek	<u>100</u>	4	<u>400</u>
			350		2,900
46	9	Carabine Creek	1,000	10	10,000
	10	Sabiston Creek	500	4	2,000
	11	Criss Creek (S)	<u>800</u>		<u>3,200</u>
			2,300		15,200
47	43	Hat Creek	8,000	10	80,000
	44	Upper Hat Creek	<u>500</u>		<u>5,000</u>
			8,500		85,000
		District totals	<u>16,285</u>		<u>140,065</u>

Table 29

Ponderosa Pine Killed by Douglas-fir Tussock Moth,

1946 - 1948 Inclusive

Region	Comp.	Location	No. trees killed	Volume per tree (cu. ft.)	Total volume (cu. ft.)
KAMLOOPS FOREST DISTRICT					
34	5	Durand Creek	35	127	4,445
	6	Walhachin	<u>50</u>	20	<u>1,000</u>
			85		5,445
35	3	Roche Lake	15	79	1,185
	4	Dufferin Hill	20	42	840
	10	Durand Creek (E)	<u>200</u>	102	<u>20,400</u>
			235		22,425
36	9	Duck Range	<u>100</u>	11	<u>1,100</u>
			100		1,100
45	8	Little Shuswap Lake	<u>30</u>	11	<u>330</u>
			30		330
		District totals	<u>450</u>		<u>29,300</u>