1923

File copy. Copy Mailed Dr. Swaine Dec. 18-1923.

Copy of Report on Yakh sent Chief Forester, Victoria & D. F. Cranbrook Dec. 20-1923.

~~PROVINCIAL~~

ANNUAL REPORT FOR 1923.

....

FOREST INSECT CONTROL.

....

Epidemics of Forest Insects, generally bark-beetles, have caused much loss in the pine areas of British Columbia since, or at least shortly after logging operations commenced. Losses undoubtedly occurred before this period due to infestations which were the result of fires and wind-thrown timber; but these epidemics were few and far between. Our history of these outbreaks all over the world show that epidemic losses result from upsetting the balance provided by Nature. In our logging operations we have upset this balance. For instance the logging operations in Europe during the war have resulted in epidemics which are now being controlled, and must be controlled, before their forests can be re-established, this is true not only in France, but also in England.

The Provincial losses, although existing in white pine, spruce, Douglas fir and balsam types of timber have been greatest in lodgepole and yellow pine types, especially in the latter. About 1912 an epidemic infestation started in yellow pine five miles from Princeton, which in seven years resulted in the loss of about 130 millions of feet, board measure, of yellow pine, (Pinus ponderosa) before it died out, due probably to the slow increase of parasitic and predaceous enemies. The highest percentage of yellow pine killed on one square

mile was 90%, the lowest 40%. Dr.J.M.Swaine visited this area several times between 1913 and 1919 as well as the areas around Merritt, which were just beginning to be epidemic.

For the Merritt district he tried to obtain funds for control operations from the Provincial Government, but was unable to do so until the spring of 1920, when the epidemics on the Coldwater watershed around Merritt had assumed decidedly epidemic proportions. The author of this report was then placed in charge of the entomological end of the control work and the first control project was begun in the Midday Valley, a tributary of the Coldwater in 1920, the administrative end being under the supervision of the Provincial Forest Branch.

An extract from the "Report of the Dominion Entomologist for the year ending March 31, 1915", page 29, gives an idea of the situation at that time, four years before any control work was undertaken.

"The Bark-beetle infestation in yellow pine in the Okanagan district is more extensive than at this time last year, and has spread rapidly in some parts of the infested area, while at others, notably about Princeton, the spread appears to be less rapid than during the season of 1913. The infested region surrounds Okanagan Lake and extends as far west as Princeton and Nicola. The bark-beetles causing this outbreak, Dendroctonus monticolae and Dendroctonus brevicomis, are not known to

be causing serious damage east of the divide between Okanagan Lake and the Arrow Lakes; but their appearance in any body of yellow pine, black pine, or western white pine is to be expected sooner or later wherever these trees occur in large stands in British Columbia. Isolated dying trees in considerable numbers, or clumps of dying trees of these species should receive prompt attention. In the districts which have been infested longest the destruction is enormous. Above Peachland, on the Okanagan Lake, the yellow pine and the black pine have been practically killed off by the beetles, and the hillsides appear as though swept by a great fire; only the islands and strips of Douglas fir remaining green. This infestation of the yellow pine and of the black or "jack" pine is a very serious matter, and timber owners in the infested region and about its extending margin should take due precaution to check its spread. Fortunately, such outbreaks can be controlled if taken in time, and under favourable conditons the control measures do dot involve much expense in districts which can be lumbered profitably."

Causes of Epidemic Infestations.

Quoting from the same report and page, Dr.J.M.Swaine denotes the cause as follows:

"The great loss already caused by the Bark-beetle outbreaks and the apparent certainty of still greater destruction, demands vigorous control measures

in many districts. The proper disposal of pine slash is a very important factor, for the beetles frequently breed to immense numbers in such abundant supplies of breeding material, and spread thence into the green timber. It should be a settled policy in British Columbia to burn all pine slash each season between October and May, as an aid to Bark-beetle control. The activity of other species of Bark-beetles in spruce and Douglas fir will apparently soon render the burning of spruce and fir slash equally necessary."

During the period of the writer's control work in the western United States there were numerous examples of epidemics occurring from the non-burning of yellow pine slash. In the Tres Ritos (Three Rivers) district of northern New Mexico, a timber sale was made to a lumber company to manufacture lumber and ties. The sale covered four tributaries of the river which we will call 1, 2, 3 and 4. The saw timber was marked for cutting. The lumber company then cut the ties from 1, 2 and 4 but did not cut the saw timber marked. At the end of three years this saw timber marked for cutting was nearly all dead except in tributary 3 where no tie timber was cut. Tributary 3 was between tributaries 2 and 4. In other words the epidemic infestation existed only in the tributaries where the slash from the tie-cutting was left and not burned. Again in California a power company slashed the reservoir site and left it unburned. During

the next three years the pine timber on the mountain above was about 80% killed from Dendroctonus infestation starting in the reservoir slash as evidenced by the infestation spreading fan-shaped from the slash as well as the evidence of the breeding of Dendroctonus in the slash the first year after cutting.

Here in British Columbia the epidemics have followed the centers of lumbering operations, epidemics first occurring in our yellow pine west of Okanagan Lake, then at Princeton and finally in the Coldwater near Merritt.

Outside of a few infestations caused by wind-thrown timber and trees weakened by fire we may designate two causes as chiefly responsible for our epidemic infestations:

1. Saw logs left in the bush.
2. Unburned slash.

Epidemics caused by slash, ie. cull logs, tops and saw logs left on cut-over land, do not immediately become epidemic. The rise of the infestation is at first slow, but after several years it begins to increase rapidly. To the ordinary observer the killed area, therefore, does not become noticeable until three or four years after the logging operation. Consequently areas of infestation are continually appearing, either contiguous to cut-over areas or from the natural comparatively slow spread from uncontrolled infestations, which have already started from past logging operations. Certainly no one factor, even

unburned slash, has been as responsible for causing epidemics as that of leaving saw-logs in the bush over one year. Every year to the present this happens, not a few logs but often from two or three hundred thousand feet, board measure, to one or one and a half million feet. No control operations can be thoroughly successful until these two causes are absolutely eliminated.

The lumber companies are regularly penalized, paying not only for the logging operations but double stumpage for saw-logs they never get to the mill. No penalty should be too great for neglect to utilize saw-logs already cut.

Control.

While the two factors, the leaving of saw-logs in the bush and the non-burning of slash in the past, have caused the control work to be not as effective as it should be, nevertheless an indication of the effectiveness may be shown in the remark of one of the oldest logging contractors in the Midday Valley, who said, "If no insect control work had been done here, I am convinced we should not be logging today in the Midday". And this man thought our insect control work when we began in 1920 to be "Bunk" as he expressed it.

The area on the west side of the Coldwater including the Midday Valley not not spius Creek, was estimated to contain about 200 million feet of yellow pine of which at least 20 million has been killed, 10 million

of which has been cut and burned by direct control operations; and probably between 40 and 45 million cut and milled. There is, therefore, over 100 million feet yet to be cut.

In the Aspen Grove area on the east side of the Coldwater including Pike Mountain, is an estimated stand of 300 million feet, of which about 5 million has been killed and 5 million cut and milled.

The Aspen Grove area thus ranks first in consideration of control operations, especially if we are not able to enforce regulations as to disposal of saw-logs and all slash on the area west of the Coldwater.

Control by logging operations while theoretically an efficient method of bark-beetle control does not work in practice, and in this case has proved an utter failure. Various factors have contributed to this failure, the most important of which seem to be the presence of the bluing fungus in freshly infested trees, the failure of logging companies to confine their logging to infested areas, and weather conditons that interfere with the removal of logs at the proper time.

Direct control must therefore be depended upon to save the timber on the areas involved and unless this direct control is carried on in the future, 250 million feet will be dead by 1928 and possibly much more.

I would therefore recommend that crews should be placed, one each in the Midday, Olsen's on the Coldwater, Voght Valley and Pike Mountain. A fifth crew should be

provided with a Ford truck in order that they may move camp frequently and work out the small areas and spots now appearing in the Aspen Grove area, which are rapidly becoming epidemic.

I would also point out that a Ford truck would not only be the best means of moving camps quickly for this "Flying crew" but would also save considerable expense and time in establishing the camps in the spring and moving them later on. If properly scheduled this truck could also move supplies to the various camps between the dates of moving the flying crew.

I would also call to the attention of the Forest Branch that with an epidemic infestation only approaching a yearly loss of 5 % of the stand on any square mile, the Forest Service of the United States has spent $250,000 in the last three years in southeastern Oregon and will further clean up the reinfestation for the next three years by small control crews, with a further maintainence by the rangers after that. This plan is the same as recommended by me in my control operations in the western United States in 1914.

The proposed work for 1924 for the infestations in the Coldwater and Aspen Grove regions will put this epidemic, a much more severe one than that in the United States, on a recleaning basis for 1925.

This recleaning with a smaller expenditure each year will have to be maintained throught the years of

1925-26-27, providing future lumbering operations take care of the saw-logs and resulting slash before they increase the present infestations. Epidemic infestations can largely be prevented by good forest management.

We have gone a long way in the past year toward good forest management, but results, as far as bark-beetles are concerned will not appear until two or three years after the rules and regulations are rigidly enforced.

The following table gives the approximate number of trees in each region to be worked next season. It does not cover however any infestation which may spring up due to careless logging operations.

Approximate Infestation to be Worked.

Region	No. of Trees	Remarks.
Coutlee Plateau	700	
Midday Valley	600	Including whole valley.
Coldwater	2,500	West side.
Voght Valley	3,800	Including Goldman property.
Pike Mountain	3,000	Including scattered areas.
Aspen Grove	2,000	Isolated patches.
TOTAL -	12,600	- Total cost, approximately $30,000

The Voght Valley and Pike Mountain areas decidedly show the effect of the control work as the unworked infestation is only holding its own and from all indications is not increasing this year. The isolated or scattered patches in

the Aspen Grove region are increasing and unless controlled will eventually kill from 40 to 90 per cent of the fine yellow pine on this plateau.

Work should be started promptly on April 1st, unless the spring is unusually late and care should be taken to have all equipment on hand at least ten days previous to that date. Of primary importance is the prompt moving of camps to insure the least amount of walking by a crew, and each camp placed as near as possible in the center of the heaviest part of the infestation.

It is also suggested that special printed form books be supplied for this work, as the correct tabulation of the data is important, especially in subsequent adjustment of refunds from license holders and owners of timberland.

The efficiency of the crews should not be judged from any one item on the tabulated data attached. I believe the efficiency can partly be judged by taking the three items "Average ft. B.M. per tree", "Cost per tree" and "Cost per M.B.M." into consideration and balancing the three items. It would thus seem that $8.00 per M.B.M. should be a maximum and that anything above that would be excessive, unless there were extenuating circumstances, such as men supplied to the foreman who had never worked in the woods, very rough country, excessively small and short trees etc. The Coutlee and Nicola Pine crews had to deal with small trees, but nevertheless

the price per M.B.M. was higher than it should have been.

The per cent of reinfestation only applies to the area recleaned. In the Spius the infestation was reduced 90% the first year, which shows what can be done if outside influences, ie. logging operations, do not interfere.

Infestations in other parts of British Columbia are under investigation and are not included in the estimates submitted. The most important is that at Lorna, where the Kelowna watershed is in danger from an epidemic in lodgepole, maps of which have already been submitted to your office. This epidemic is increasing rapidly and will probably exterminate the mature lodgepole over a large area. Additional reports will also be made on the Adams Lake work and the Yahk infestation, and the matter of recleaning the Spius Creek area taken up with the Dominion Forest Branch.

As a result of our investigations and studies the following recommendations are therefore made. These recommendations do not include administrative supervision, which is a most important factor and should take the time of one man during the entire period of the control work. No matter how good the foreman he should be periodically checked on his methods of keeping his data, moving of camps, methods of work etc. This is largely a matter of

duty. I believe that the reorganization of crews as indicated in the recommendations will materially lessen the cost of operation.

Recommendations.

1. The removal of any saw-logs cut previous to December 1st of any year by May 1st of the following year.

2. The burning of all slash twice a year, in the fall and in the spring.

(a) By piling over the tops, cull logs and stumps.

(b) By piling in the open, away from reproduction and seed trees

3. The enactment of the proper legislation to cover the enforcement of 1. and 2. on all classes of timberland.

4. The reorganization of control crews of 18 or more men on the basis of the operation of the Pike Mountain crew tried out last spring and found to be more economical and effective.

(a) Two sets of fallers of 2 men each.

(b) Balance of the crew divided in half, half limbing and half piling.

(c) Burning one day per week until mature beetles appear and after that burning every day.

October 3rd, 1923.

Dominion Forest Entomologist for B.C.

Name of Project	Year worked	No. of trees worked	Ave. ft. B.M. per tree	Total B.M. worked	% of re-infestation	Cost per tree	Cost per M.B.M.	Total cost	Approx. acreage	Ave diam.
Midday Valley	1920	3150	177	556,145		1.86	10.60	5893.19	4000	
Recleaned	1921	575	200	113,310	20.4%	2.85	15.29	2874.80	4000	
Extended	1921	435	171	74,600		Included above		Included in above	700	
Reinfestation not worked	1922	498	212	105,414	16.7%	Checked – Trees numbered and cruised only			4700	
Kingsvale	1921	2945	165	486,435		2.06	12.27	6072.20	1280	
Loght Valley	1922	4502	199	893,658		1.35	6.82	6089.82	1440	
Recleaned in part & extended	1923	1904	372.1	~~720,495~~ ~~689,180~~		2.48	6.63	4802.09	2560	17.5"
Pike Mt.	1922	2619	399	1,045,091		1.61	4.05	4231.24	1572	
Recleaned in part & extended	1923	3120	523.8	~~1,635,235~~ ~~1,634,235~~		1.88	3.51	5844.49	1175	16.6"
Coutlee	1922	536	419	224,768		2.63	6.26	1407.62	720	
Recleaned + extended	1923	1352	106.3	143,835		2.24	21.04	3027.49	2280	14.3
12-Mile	1923	1999	298.2	596,120		2.13	7.13	4250.33	1220	
Nicola Pine	1923	1435	99.6	142,970		1.54	15.5	2221.04	1320	14.1
Spius Cr. (Dom.)	1920	2647	269.4	710,532		1.76	6.55	4662.86	2280	
	1921	1322	372	491,833	10%	2.04	5.46	2687.32	3240	
	1922	880	Data not yet available	~330 580		2.54	6.76	~~22~~30.87	1320	
Adams L.	1921	493	69	32,475		2.92		1444.42		
	1922	415	86	35,717		2.76		1147.23		
	1923	834	Data not yet available	~~178.6~~ ~~148.485~~		2.75	14.89	2279.00	3840	

EXPENDITURE ON INSECT CONTROL WORK I920-I923.

I920.

Total Cost approximately $7000.

I92I.

	Total Cost.
~~VOGHT VALLEY~~ Kingsvale	$6,072.20
MIDDAY VALLEY	$2,874.80

I922.

	Total Cost.
'OGHT VALLEY	$6,089.82
COUTLEE PLATEAU	$I,407.62
PIKE MOUNTAIN	$4,23I.24

I923.

	Total Cost	Av. Cost per Tree	Cost per M.B.M.
I2 MILE	$4,250.33	$2.I3	$7.I3
VOGHT VALLEY	$4,802.09	$2.52	$6.97
COUTLEE PLATEAU	$3,027.49	$2.24	~~$20.98~~ $21.04
'IKE MOUNTAIN	$5,844.49	$I.88	$3.5I
NICOLA PINE MILLS	$2,22I.04		

17.924.40

Total cost 1923 - 17.924.40
Total trees 1923 - 8469 + Nicola Pine 1435 = 9894 Trees.

Insect Control 1923.

The insect control work of the bark beetle infested area of the Merritt District for 1923 began April 5th, and terminated about June 10th. This was a yellow pine infestation, although occasional groups of lodgepole (Pinus contorta) occurred in the stand and were also infested. The mortality was due to the work of Dendroctonus monticolae and Dendroctonus brevicomis. The former only attacking the lodgepole.

The accompanying maps show the areas worked, marked in red with the name of the crew working the area.

The average number of men in each crew was approximately as follows:-

Coutlee Plateau	11
Twelve Mile	18
Voght Valley	22
Pike Mountain	22
Nicola Pine	12
Total	85

In addition to this a Mr.Morrissey worked 1163 trees in the Aspen Grove country for various owners of timber licences, but no record is yet available.

The total number of trees cut, barked and burned by the several crews totalled as follows:-

Mr.Morrissey	1,163 trees
Coutlee Plateau	1,301 "
Twelve Mile	1,591 "

Voght Valley	1,459 trees
Pike Mountain	3,645 "
Nicola Pine	1,430 "
Total	10,589 "

The cost of the yellow pine work is represented by the following table:-

Mr.Morrissey	?
Coutlee Plateau	$3,027.49
Twelve Mile	4,250.33
Voght Valley	4,802.09
Pike Mountain	5,844.49
Nicola Pine	2,221.04
Total	$20,145.44

All these crews were under the administrative direction of District Forester A.E.Parlow.

There was also a crew working on Adams Lake in the Kamloops District under the administrative direction of District Forester E.B.Prowd.

This crew of 11 men worked 834 trees at a total cost of $2,279.00. The infested trees worked and burned were white pine - 238, Douglas fir - 588, and lodgepole - 8

Direct Control - 1924.

The direct control work for 1924 promises to be heavier upon this office than ever before as the allotment for definite projects is expected to be as follows:

Provincial Forest Branch $30,000

Dominion Forest Branch $10,000

It will therefore be seen that the men needed for the season 1924 should not only include the present force of 1923 but an additional Junior Entomologist position should be established for this laboratory at least as a temporary 6 months position.

The reappointments should take place on the following dates:

Norman L.Cutler (permanent),	May 1,1924.
H.H.Thomas,	April 1, 1924.
W.G.Mathers,	April 1, 1924.
Geo.R.Hopping,	July 1, 1924.

Cage Experiments.

Dr.J.M.Swaine and the writer conceived the idea of caging a whole infested tree before the emergence of bark beetles in the early spring. We first tried this in 1921 on one yellow pine. A cage was built and the tree cut and placed in it. In 1922 three cages were built for an infested yellow pine (Pinus ponderosa), a Douglas fir (Pseudotsuga taxifolia) and a lodgepole pine (Pinus contorta). In 1923 another yellow pine was added.

Unfortunately the 1921 cage was destroyed during the winter by loggers and the 1922 emergence, or the second year emergence was lost as the cage was smashed beyond redemption.

The second year's emergence from the three 1922 cages was recovered during the spring and summer of 1923.

In 1923 the yellow pine caged was separated into four cages, the trunk, the top, the limbs and the stump.

In all these cages the emergence was collected every day under the different experiment numbers assigned to each cage, a lot number being given to each day's collecting in each cage.

These experiments have never been conducted before as far as we are aware. Sections and parts of limbs have often been placed in cages and the emergence recovered but we are unable to place any record of whole trees being caged.

Besides the collecting of many rare species by this method the question to be determined were many and

varied some of which are enumerated below.

1. What is the emergence of bark beetles from a given tree ? On what date does the emergence begin ? When does it terminate ? And what is the peak of the emergence and between what dates is the emergence plentiful ?

2. Does any emergence of bark beetles occur the second year ?

3. Of what species of insects are the different species of trees the hosts ?

4. Have we any parasites of the bark beetles and what are they ?

5. Have we any predaceous insects and what are they ?

6. Do the parasites and predaceous insects increase from year to year as the infestation progresses ?

These are the most important questions upon which answers have been long wanting, which when finally answered will put our control work on a definite basis.

The results so far have been astonishing from many sides of the question. The number of parasites both Dipterous and Hymenopterous of many species recovered have been enormous, while the recovery of predaceous insects has been comparatively small.

During the coming year we expect to extend the experiments to other species of trees such as white pine, balsam etc.

The amount of insects recovered in one day from the cages often exceeded 3,000. It will therefore be seen that

the work of determining and mounting the necessary material is a long task and not yet finished.

The final object is to publish a bulletin on the experiments on iach species of tree.

The attached photos will give some idea of the type of cage used, consisting of a board floor covered with cheese cloth and a skeleton frame also covered with the same material.

Three photos of cages.

From the 1923 yellow pine (Pinus ponderosa) 28,783 insects were recovered between June 14 and August 28, 1923. Mr.Norman Cutler spent three months separating, counting and determining these insects which were mostly Coleoptera although parasites in large numbers occurred both Hymenopterous and Dipterous. A small number of Lepidopterous and Hemipterous insects also occurred. All unknown species and occassional insects, few in number, were mounted besides a series of each species occurring in quantity in order to finally check the identifications. The bulk of the material where species occurred in quantity were merely counted and left in the vials.

An instance of the value of these cage experiments may be seen in the relative number of Dendroctonus brevicomis and Dendroctonus monticolae emerging from the different portions of the trees, ie. Trunk, Stump, Top

and Limbs.

	D.brevicomis	D.monticolae
Trunk	3,977	836
Stump	567	10
Top	1	1,497
Limbs	2	80

It will therefore be seen that stumps left in a cut-over area are responsible for much of our reinfestation of Dendroctonus brevicomis but scarcely responsible for the reinfestation of Dendroctonus monticolae while the tops of trees are perhaps largely responsible for reinfestation by the latter species.

Correspondence.

The letters and packages for the calendar year 1923 sent from the Forest part of the Laboratory are as tabulated below. I wish to mention here that it is largely due to Mr.Norman Cutler that the work has been ent out in the shape it has, as he employed his evenings learning to run a typewriter.

Letters, official.....153.

Letters, general correspondence;..192.

Total correspondence 345 letters.

Packages..... 42

The packages included shipments to Ottawa, lots sent in for determination by the University of British Columbia, Prof. Drake of Ames, Prof.Blackman of Syracuse, The Academy of Sciences of San Francisco, H.P.Loding of

of Mobile, Ala., Chas.Liebeck of Philadelphia, Pa., H.W.Wenzel of Philadelphia, Pa., W.Downes of Victoria, B.C., and various lots for the Dominion and Provincial Forest Branches.

Inspections.

Besides the inspections made periodically during the actual control work in April, May and June and the checking up of infested areas in July, August and September, examinations were made of 17 timber sales for the Forest Branch and infestations reported by the Kamloops, Vernon, Cranbrook and Nelson districts.

This necessitated travel of 7100 miles by the writer's official car and approximately 1800 miles by the car used by H.H.Thomas.

Vernon Laboratory.

In this laboratory the data has been brought up to date on all experiment records but a certain amount of summarizing and consolidation is yet to be accomplished. The material collected (general collecting outside of cages) has been mounted, mostly by G.R.Hopping whose excellent work, both in mounting and identification work, has been of great help to this office.

A card index of bibliographical reference has also been completed of about 3,000 cards and the Coleoptera records brought up to 600 identifications of absolute authenticity. We are also indebted to Messrs. Frost, Fall, Blaisdell and Liebeck for identifications in certain groups

in which they are particularly interested.

Much of this material is now ready for the transmittal to Ottawa. I shall bring this with me in January and as much more as we can get in shape by that time.

Separate reports have already been forwarded the Ottawa office not included in this report such as the estimates for 1924-25, requisition for supplies and copies of individual reports to Victoria and the Dominion Forest Branch.

December 15, 1923.

Dominion Forest Entomologist for B.C.

REPORT ON THE YAHK INFESTATION IN

LODGEPOLE PINE (Pinus contorta).

.....

Due to various reports of an increase in the Lodgepole infestation in the Yahk watershed I met Mr. Geo. P. Melrose, Assistant Forester, of Victoria and Mr.Stevens of the Cranbrook office, at Yahk on Oct.26th. We were there joined by the logging superintendant of the Yahk Tie and Pole Company, who accompanied us upon our inspection trip. Through the courtesy of the latter, who afforded us transportation and accommodations, we were able to reach the area in the least possible time. At the time of my examination of this general area in 1921 for the C.P.R., infestation in lodgepole had been largely destroyed by the sweeping fires of 1920 - 21, only a small amount of infestation existing on the margins of the fires which had extended into the Yahk watershed.

We found that this infestation had increased tremendously and now extended over a considerable area (about 3 square miles) on the West Fork of the Yahk and well over the International Boundary into Montana. In the centre of this infestation over 50% of the lodgepole stand is now infested or dead. The weather was not conducive to a very detailed examination as it began to snow while we were on the area. There was however every indication that the infestation was spreading. This infestation was due to the attacks of the bark beetle Dendroctonus monticolae. Many freshly infested trees were seen which will finally die in the spring of 1924.

Whether control operations are advisable will depend upon the amount of merchantable lodgepole adjacent to the infested area of which there is very meagre information. Roughly I should estimate that control operations if conducted in 1924 would cost about $3,000 for the Provincial part of the infestation and about $1,500 for the U.S. Forest Service.

If the adjacent merchabtable uninfested stands warrant control measures they should be undertaken not later than May 1,1924. I should therefore recommend that a further joint examination (ie. In conjunction with the U.S. Forest Service) be made in April 1924.

Nov.26th,1923.

RALPH HOPPING

Dominion Forest Entomologist for B.C.

File copy.
Two sent Swaine Dec. 4-1923
Copy sent Prowd Dec 4-1923
Also included in Annual Report Dec. 15-1923.

REPORT ON THE

SO-CALLED SCOTCH CREEK INFESTATION.

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As promised, District Forester Prowd and the writer inspected this area Oct.13th to 16th inclusive. Mr.Brown of the Dominion Forest Branch expected to accompany us but owing to press of business was unable to do so. The latter however placed the Dominion power boat at our disposal which landed us at the proper point on the shore of Adams Lake and later picked us up at the same point.

This point is situated about midway of the lake just south of the Dominion-Provincial boundary. The ground rises rather steeply, about 2,000 feet in four miles. The infestation is about 3½ to 4 miles from the lake shore a fairly good trail being still in existence although one small portion of about 100 yards would have to be cleared of fallen timber before horses could be conveniently used.

The location of the infested area is not exactly in Scotch Creek but at the head of a tributary of that creek and could be considered as more on the Adams Lake slope. The area infested is about one mile in length, (north and south) by about one half mile wide.

The immediate surrounding timber stand is hemlock and white pine. We were greatly surprised to note the size of both species in the surrounding timber, trees four feet in diameter, were not uncommon and trees of both species were seen 60 inches D.B.H.

The infestation existed on a comparatively flat bench of about 80% white pine and has increased tremendously in the past year, so that the freshly infested timber can be seen from Adams Lake. One official of the Adams Lake Lumber Co. stated he had watched the increase of this infestation from the opposite mountain across the lake for the past three years.

These benches and pockets of white pine exist here and there over a large area in the vicinity of this infestation connected by areas in which the white pine becomes only 10 to 20% of the stand and occassionally where lodgepole comes in almost ceases to be part of the stand. Any infestation can therefore spread from one white pine area to another.

The infested area is wholly on Dominion territory about one mile south of the Dominion-Provincial line. Just north of this line on Provincial territory is a fine pocket or bench of white pine not yet infested.

Further north the Provincial Forest Branch have controlled a large infestation in white pine and Douglas fir, working the area three seasons in 1921,1922 and 1923.

SPIUS CREEK

A thorough reconnaissance was made of this area between July 11 to 17 inclusive, during which the infested trees were marked and numbered, totalling 1079 trees or 258,515 board feet. A map of the infestation showing the existing groups has already been submitted the Ottawa office

of the Dominion Entomological Branch. In addition there exists on the opposite side of Spius Creek, opposite the mouth of Prospect Creek an area of approximately 2,000 infested trees. These trees however are mostly of small diameter and short length. The infestation can be reached from the Spius Creek side by the old Boston Bar Trail.

The infestation both at Adams Lake and in Spius Creek is due to the bark beetle Dendroctonus monticolae. In Spius Creek however there is added the depredations of another species that of Dendroctonus brevicomis.

I would suggest that an appropiation of $10,000 be made for the spring of 1924 divided as follows:

Spius Creek $6,000

Adams Lake $4,000

The Provincial Forest Branch it might be mentioned spent $20,000 in adjoining territories in 1923 and expect to continue the work in 1924, besides enforcing the piling and burning of all slash on all operations in the interior of British Columbia.

December, 3rd, 1923.

RALPH HOPPING

Dominion Forest Entomologist for B.C.

Pike Mt. Crew.
Pike Mt. Crew.
1923
PIKE MOUNTAIN.
Lost Lake
Taylor Lake
Canyon House
Myren Cr.
Burns Cr.
YALE
DISTRICTS
L.2455 A.P.2468
L.73 C.G.
L.1761 P.R.576
L.2222 A.P.1984
L.1465 T.L.44392 12912P
L.1759 C.G.
L.2462 A.P.4456
L.2231 A.P.4217
L.2226 A.P.24514
L.2223 A.P.1993
L.2220 A.P.6251
L.1466 T.L.44390 12910P
L.1899 C.G.
L.2232 A.P.4444
L.2225 A.P.27964
L.2224
L.2234
L.2237 A.P.24520
L.1310 C.G.
L.2456
L.2233
L.1758 C.G.
L.1757 C.G.
L.841 C.G.
L.2377 C.G.
L.576 A.P.8851
L.2454
L.2236
L.903 C.G.
L.1752 C.G.
L.2450 A.P.27973 C.G.
L.2449 A.P.25005 C.G.
L.2448
L.913 C.G.
L.2378 C.G.
L.689 C.G.
L.2458 A.P.27974
L.2459 A.P.27966
L.1772 C.G.
L.1754 C.G.
L.2986 C.G.
L.2446 A.P.25004
L.2698
L.2460
L.2461 A.P.27989
L.1468 T.L.44389 12909P
L.2829 A.P.13591
L.3344 P.R.1012
L.610
L.1836 T.L.44388 12908P
L.887 A.P.21887
L.477
L.687
L.690 P.R.426
L.478 P.C.G.
L.782 C.G.
L.633
L.636 A.P.32315
L.632
L.777 P.R.488
L.635 A.P.32313
L.288
L.1009 C.G.
L.2467


Siwash Mountain.
KAMLOOPS BOUNDARY
YALE
I.R. No 2.
Nicola Pine Crew
1923
12-mile Crew.
Voght Valley Crew.
Kingsvale (P.O.)
Howarth Cr.
Voght Cr.
Gwen Lake
S.T.L. 33393 8426P
S.T.L. 33394 8427P
S.T.L. 33399 8431P
S.T.L. 33392 8425P
S.T.L. 33391 8424P
S.T.L. 33390 8423P
S.T.L. 42762 11454P
T.L. 30421
S.T.L. 42772 11464P
S.T.L. 30423 8419P
T.L. 30422
S.T.L. 42771 11463P
S.T.L. 42770 11462P
S.T.L. 42773 11465P
S.T.L. 30424 8420P
T.L. 33407
S.T.L. 42767 11459P
S.T.L. 42768 11460P
S.T.L. 42769 11461P
S.T.L. 42774 11466P
S.T.L. 30426 8422P
T.L. 33408
T.L. 30420 L.I. 79382
T.L. 24131 L.I. 79432
S.T.L. 42775 11467P
S.T.L. 30425 8421P
T.L. 33409
L. 649 AK A.P. 30464
L. 648 AK A.P. 30462
L. 692 P.R. 276
L. 646 AK A.P. 30466
L. 647 C.G.
S.T.L. 30412 8415P
S.T.L. 42776 11468P
L. 302 C.G.
L. 303
L. 304 C.G.
L. 1858 C.G.
L. 774 C.G.
L. 650 C.G.
S.T.L. 42761 11453P
L. 329
L. 607 P.R. 529.
L. 606 P.R. 374.
L. 307A. P.R. 619
L. 306 C.G.
L. 340 C.G.
L. 300
L. 331.
L. 332 C.G.
L. 746 C.G.
L. 779 File 08798 P.R. 531.
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T.L. 11450P
1100

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