

British Columbia



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A HISTORY OF FOREST ENTOMOLOGY IN BRITISH COLUMBIA: 1920 -1984
Part 4 of 4 by Hector Allan Richmond, MSc., RPF

The program laboured under the handicap of three weeks of continuous rain during which time the looper fed and grew to a size considerably beyond that of greatest susceptibility to the chemical. The white mice were housed in an empty bunkhouse and fed and cared for, despite the ever-increasing and nauseating stench generated by these creatures while they awaited their call to duty.

When the weather eventually cleared the spray trials were completed and the results indicated that phosphamidon was moderately successful as an insecticide for control of the green striped looper. The program was not entirely satisfactory due to the three week delay brought on by the weather. There was no apparent ill effect on bird or mice populations. The happy mice were repacked and returned to their point of origin in Vancouver.

In 1965 an entirely new problem arose on the British Columbia coast - an infestation of a needle miner in the Holberg Inlet region at the northern end of Vancouver Island. A survey of the affected area showed it to be widespread with every possibility that some form of control would be necessary if conditions worsened. An immediate experimental spray program was initiated to determine an acceptable spray formulation for use the following year if the infestation persisted.

Being a needle miner, the insect was generally protected from the outside influences of a contact spray. A systemic chemical was indicated and its compatibility with environmental factors would be of primary importance, thus dimethoate was chosen for the trials.

The research organization was similar in nature to the phosphamidon trials on the Queen Charlotte Islands the previous year, coordinated through COFI in Vancouver, and included entomologists from the Pacific Forest Research Centre, Victoria; and Federal Fisheries, Vancouver.

While test areas were being prepared for helicopter trials, the fisheries people conducted some rather elaborate experiments on the effects of dimethoate sprayed directly over trapped salmon smolts. After spraying, they were kept for 48 hours to check for possible reactions. As they exhibited no ill effects the salmon were released, none the worse for the test.

These trials on the use of dimethoate for needle miner control proved to be entirely satisfactory, but as a natural collapse of the insect population followed, all further work was cancelled.

In 1969 there developed a most serious infestation of the green striped looper in the Holberg and Port Alice regions on Vancouver Island. Defoliation was intense and an autumn survey of overwintering pupae indicated a devastating population for the following summer. The need for control appeared to be certain, barring some unforeseen circumstance. In view of the results of experimental sprays for the same insect in 1964 on the Queen Charlottes, it was decided to apply phosphamidon if control became warranted.

Accordingly, plans were formulated for an extensive spray program to be undertaken in early summer of the following year. All spray ingredients were ordered with a proviso for their return if left unused. Formulation of the spray was delayed until spring surveys of overwintered populations could assure the necessity for the control. Likewise, aircraft were contracted for the job with the contracts being subject to cancellation if not required. A deadline for the final decision was agreed on by both the spray formulator and the aircraft.

Despite the density of overwintering insects recorded in the autumn of 1969, the action of unknown predators through the winter totally eliminated the risk of further attack and the entire program was cancelled before incurring any appreciable expense.

Bark Beetles

The significance of bark beetles in British Columbia provided the basis for initial establishment of a forest insect laboratory in the province. In the early 1920's it was thought that some degree of control could be achieved if the infested trees were cut and burned, along with the hordes of attacking beetles.

Because the bark beetle spends most of its life between the wood and inner bark of the tree it is relatively safe from any control operations applied on the outside surface. The only tried and true method of control at the time was to fell the tree, strip off its bark and branches, then pile these together and burn them. Since the insect prefers the larger and more mature trees for attack [many of which measured five feet in diameter at breast height (DBH)], this method was slow and costly. At the peak of operations, there were seven camps of thirty or more men cutting, debarking and burning the trees. This work was concentrated in early April to about mid-June.

It was during this control work that a delegation of British Columbia Forest Branch personnel arrived to undertake a first-hand inspection of the work. The group consisted of five men: the Chief Forester from Victoria, Mr. E.C. Manning; the District Forester from Vernon, Mr. Allan Parlow; the Forest Ranger from Merritt, Mr. Bob Little; the camp manager (I have forgotten his name); and myself. In addition to the five of us, we were accompanied by one of the fallers from the control camp and he was carrying a six foot long crosscut saw (this was long before power saws).

The road on which we were walking passed in front of a preemption occupied by an old fellow who was notorious for his dry sense of humour and cutting sarcasm. He stood with one foot on the lower fence rail and, resting his elbows on the upper rail, watched us as we passed in front of him. In a clear voice, he counted, "One, two, three, four, five bosses." And as the sixth man followed carrying the crosscut saw, he continued: "Say, that fellow must be a hard man to handle."

Although I was involved in this control work only during the first two years of operation, it continued through the 1920's, terminating in 1931 when it was evident that the infestation was spreading at a rate far greater than the control work. In 1935 - 1936, the infestation disappeared along with most of the old growth ponderosa pine and much of the lodgepole pine. There remained a forest of young growth, which stands today, exactly the way Nature intended in the first place.

Bark beetles constitute a perennial problem, and are the number one enemy of British Columbia timber. Responsible for annual losses of millions of dollars, these beetles are as much a part of the forest as are the trees themselves and constitute a problem with which we must live. The solution (if any) lies in managing these insects so that our timber losses are reduced to an acceptable level.

Ambrosia Beetles

Of all wood boring insects (as opposed to bark beetles), none compare to the ambrosia beetle in economic importance to the forest industry in British Columbia. This small black wood borer infests recently-felled logs by mining small blackened tunnels into the sapwood in which the insects breed and produce their young. All tree species are attacked, with cedar being the most resistant. Since this is primarily a west coast problem, practically all ambrosia beetle research in Canada has been done on the Pacific coast.

Losses caused by this insect are difficult to determine since dollar losses are relative to many factors which vary from year to year. These include the methods of milling (dependant on market demands); markets for which the logs are milled and specific grading rules; whether the material is for export or North American sales; species, size, grade, and type of log affected; number of beetle holes per unit area; and other factors. An extremely intensive and accurate study on sawlog losses was undertaken as a joint venture by the Pacific Forest Research Centre and the Federal Forest Products Laboratory. A separate "pony" mill owned by British Columbia Forest Products but assigned exclusively to this study was used under the direction of the two researchers, McBride and Kinghorn¹. Based on 1969 lumber sale

prices losses were \$14 to \$20 per thousand foot board measure for Douglas-fir and \$18 to \$23 per thousand foot board measure for hemlock, according to the R-List grading rules.

The principal target of the ambrosia beetle is the green-cut log either in the woods or floating in a boom. On land the insects infest logs on all sides while only the upper exposed surface of floating logs is attacked. Although chemical insecticides can reduce attack, it is physically and economically impossible to spray the undersurface of logs lying in the woods. The only practical treatment is to float the logs before attack and spray after they are boomed.

The early work of ambrosia beetle control was restricted to benzenehexachloride (BHC). This was used for the first time in a hand spraying application on Cowichan Lake in late 1949. Nothing came of these early tests until the mid-1950's when British Columbia Forest Products undertook some control operations on Cowichan Lake by hand spraying from a floating barge.

In 1958 MacMillan Bloedel attempted a large-scale operation on Alberni Inlet. A three-man crew on a floating raft containing a fire pump and spray materials was towed from location to location while two men operated hoses by hand. Each log was sprayed individually with an emulsifiable concentrate of BHC diluted with water. The procedure was very slow and costly and because of this, aerial application was attempted. Although rapid and effective, the fixed-wing aircraft had the disadvantage of being unable to fly low enough due to the hazards of pilings, dolphins, and the shoreline. Furthermore, it flew too quickly to permit an accurate drop on such a limited target as a boom and extensive areas of water were also sprayed.

In 1959 tests were made using a helicopter. In addition to overcoming the principal disadvantage of fixed-wing aircraft, helicopters had the advantage of operating from a barge towed to the booming grounds, thus eliminating the ferrying time charged by fixed-wing aircraft. Control measures were henceforth restricted to helicopters.

Preliminary spraying used an oil concentrate with a water-diluted emulsifier. This formulation was applied in sufficient quantity to drench the bark of the log and mixed immediately with the water in which the logs were floating. Caged coho held at various depths showed immediate toxic effects as deep as 64 inches. The program was then modified to use an undiluted oil concentrate, without an emulsifier, applied as a fine mist over the log surfaces. The result was only a fine oil slick on the water between the boomed logs. Caged fish showed effects only in the upper six inch level with most of those affected having actually come in contact with the surface oil slick. As a further safeguard all spray application was completed by mid-April, before the main migration of juvenile salmon from the fresh water streams to the sea.

The dosage used was 10 gallons of concentrate containing 10 pounds of gamma isomer of BHC per acre applied without diluent. A helicopter load was 45 gallons, sufficient to cover four, 8 section, flat-rafted booms. The average time per load including ferrying, spraying, and loading was 15 minutes.

¹McBride, C.F., and J.M. Kinghorn. 1960. Lumber degrade caused by ambrosia beetles. B.C. Lumberman 44(7): 40-52.

Because of the undesirable side effects of BHC (similar to those of DDT), it soon became urgent to develop more compatible means of log protection. Through research sponsored by COFI a suitable replacement for BHC was developed - an organophosphate called methyl trithion. It was as effective in beetle control as BHC but due to its shorter effective life, accurate scheduling was required to coincide with beetle activity. The chemical had no apparent ill effects on fish regardless of when or how it was applied, and it was practically odourless.

Methyl trithion replaced BHC as a log spray in 1968. Nevertheless, objections to the application of any kind of poisonous chemical on Cowichan Lake were placed before the Provincial Department of Health by local residents in early 1970. The outcome was the outlawing of the application of all poisonous materials on fresh water bodies in the province. Spraying of logs on salt water was approved due to the more rapid dilution and breakdown of the chemical in that medium.

The spraying of logs on salt water came to a halt in 1970 when the International Woodworkers of America (IWA) refused to handle any logs on Alberni Inlet that had been sprayed. Similar opposition developed at the log sorting grounds at Teakerne Arm on West Redonda Island. It was obvious that this was the beginning of much wider opposition and so the industry abandoned any further attempts to use poisonous insecticides for log protection.

Summary of Log Boom Spraying 1961-1969

Total volume of insecticide used (as applied)	24,344 gallons
Total area of log booms sprayed	3,234 acres
Total log volume sprayed	743,427,000 fbm

With the termination of log spraying, COFI directed their efforts toward log protection in dry land sorting grounds, whereby the air surrounding the log storage area was enveloped in a mist of water pumped from the sea without any chemical added. When operated on a continuous basis through daylight hours, this gave 100% protection throughout the log storage area. The biological assessment of effectiveness of this method was conducted by a research team of the Canadian Forestry Service.

The most recent advancement toward log protection comes from the research of Dr. John Borden of Simon Fraser University and Dr. John McLean of the University of British Columbia in the isolation and use of pheromones (chemical attractants produced by the insect). After several years of intensive research, pheromones were used for the first time in 1982 by MacMillan Bloedel to trap invading beetles and thus protect logs in storage. This method has great potential as a means of managing a beetle population but still remains in its early stages of development.

Unquestionably, the best course for minimizing losses from ambrosia beetles is careful management and the schedule of logging, storage, and utilization of sawlogs. Such a program is at times complicated and difficult to attain, but where possible, it is very effective.

Forest entomology in British Columbia has now entered a totally new phase in its development in the province, with the entry of the British Columbia Ministry of Forests into the field of pest management and in the commercial development of some of the more practical results of research from the Pacific Forest Research Centre and the universities in the province.

Foremost in this development have been two companies. One has now successfully registered four pesticidal products in Canada. This company includes ten scientists led by Dr. George Puritch, formerly with the Pacific Forest Research Centre, Victoria. Dr. Puritch is a pioneer in the development of fatty acids and their salts (soap) for the control of certain pests.

Of the large group of fatty acid compounds, only a few are insecticidal. Besides being non-toxic and biodegradable, soaps are selective and specific combinations can be developed to affect a small group of pests. Products thus far developed are effective in killing eight common pests but are harmless to beneficial insects such as bees and parasitic wasps. This industry is still in its infancy and has significant potential for future development.

Of interest, also is the commercial production of pheromones for the protection of logs from ambrosia beetle attack. This venture is being promoted by a Vancouver-based company which produces pheromones for the control of other insects and this program will expand as pheromone research progresses.

Conclusions

The birth of forest entomology in British Columbia resulted from bark beetle devastations and today bark beetles remain the dominating force in directing research and action by forest entomologists within the province. A transition from the "nozzle-head" and "fire-fighting" philosophy has taken place with the development in recent years of new and ever-improving chemical means of pest control and the recognition of the vital role of good pest management toward controlling the damage rather than the pest.

This, combined with the ever-mounting public opposition to the use of chemicals in our environment is ushering in an era with a new and totally different philosophy toward managing our native pests. As forest management intensifies and the average stand age declines, some pests of primary importance today will also decline, only to be replaced by a multitude of other pests whose depredations will become significant in a future where timber values are higher.

REQUEST FOR PHOTOGRAPHS

At a meeting this summer Bill Backman, President; Edo Nyland, Treasurer; and John Parminter, Newsletter Editor agreed that a small collection of photographic slides should be assembled to illustrate the forest history of this province. These slides would be kept in one location and available on loan to anyone needing illustrative material for presentations on forest history. It is not intended that this collection would supplant any other photographic collections in existence but rather to complement them and primarily act as a source of information for FHABC members and others.

If FHABC members could search through their own collections, select a few suitable slides, have duplicates made, and send the duplicates to the treasurer (address below) we can make a start at assembling a collection. Please include a brief description of the item, place, date, people, and photographer, etc. for indexing and identification purposes. Reimbursement of photo processing costs will be made from general association revenues upon request - please enclose receipts if this is desired.

It is recognized that limiting the collection to slides alone will only take us back to perhaps the early 1940's but if initial results are encouraging a second call will be made for historic prints and arrangements made to produce slides from them. A list of available slides could be published in future newsletters and details on borrowing procedures outlined as well.

FHABC LOGO VOTE RESULTS

Over a year ago votes were solicited at membership renewal time to select a logo for the association. Space limitations in the newsletter have prevented publishing details on the winning entry until now. The winner (by one vote) was the following design:



If ever the association produces crests, pins, or what-have-you this would be the design used. The masthead logo for the newsletter will remain as is but it was deemed necessary to create a simpler design for use as a logo.

ooOoo

This newsletter is the official organ of the Forest History Association of British Columbia and is distributed thrice yearly at no charge to members of the Association, libraries, and to certain institutions. Items on forest history topics, descriptions of current projects, requests for information, book reviews, letters, comments, and suggestions are welcome. Please address all correspondence including changes of address to the Editor: John Parminter, c/o Protection Branch, Ministry of Forests, 1450 Government Street, Victoria, B.C. V8W 3E7.

Membership in the Association is \$5.00 yearly. Should you wish to join or obtain further information please write to the Treasurer: Mr. Edo Nyland, 8793 Forest Park Drive, Sidney, B.C. V8L 4E8

THE SKINNER by Harry W. Laughy

Stuck in a hole in the portage road
With a wheel bogged out of sight,
A greenhorn skinner with a six-horse team
Watched the dusk merge into night
He was far from camp; he was out of grub;
He had yelled till his lungs were sore;
Not a horse in the six-up would tighten a tug,
They had hauled till they'd haul no more.

Then round the bend by the big pine stump
Came a string team a-swingin' along,
And the man on the load filled the woods as he passed
With a rollicking log-camp song.
"Hello there, kid, you're sure some stuck,"
And he swung from the load to the ground.
"Let me take a pull at that deadhead bunch."
Then he took a mooch around -

A-liftin' a collar to straighten a pad
A-bucklin' a hame strap tight.
Then he climbed to the seat with a lilt on his lips
And a tilt to his old clay pipe,
An armful of ribbons he pulled off the break
And straightened one by one,
Then he spoke to a leader, "Tread up on that line,
You bat-eyed son of a gun."

"What's that wheeler's name? Come alive there, Pete!"
And he dropped the shag with a bang.
"Stand away from the pole there, you soft-horned cow,
Or I'll skin you alive. Whoa! hang
Up the line on that pointer's hame!
Now get out of the road there! Gee!
Gee off, you leaders! Get in on the point!
Now steady, you've shook her free."

"Is she clear there? No? Well, we'll hit her again!
Now whoa till we clear that swing.
Then we'll take her away with a bone in her teeth
Or we'll make the riggin' sing!
Now steady," he said. "Tighten up there, boys!
Take care now, lads! Get away!"
He bent them haw as he dropped the bud
On a big cold-shouldered bay.

The wheelers dropped till their bellies dragged -
One slipped but came up again.
The pointers hung like a pup to a root
Till the leaders took the strain.
Then a jerk, a lurch and a "Steady, lads,
You've rolled her high and dry!
You could haul the pole from the hubs o' hell,
If you'd only get down and try."

FORESTRY -- PAST, PRESENT, AND FUTURE
Part One of Two - by R.G. McKee, Deputy Minister of Forests
Talk to Annual Banquet, U.B.C. Forest Club February 18, 1965

When I received your flattering invitation to address the graduating foresters, I gave some thought to the subject and made it broad enough to encompass a lifetime. As I am the first forestry graduate of U.B.C. to spend my working days since I received my sheepskin in the Provincial Government Service, I thought you might be interested in my ideas on the subject of "Forestry -- Past, Present, and Future."

I realize, too, as the retiring Deputy Minister of Forests come next December, that this will be my last chance to speak with authority to such a group. I could wish that I was ten years younger, because these are exciting times for foresters in British Columbia, and we are on the verge of a period of more intensive forestry. However, I have no regrets, because we older people were in it from the beginning, and I know that the foundation for good forestry has been well and truly laid.

To date, our results have been rudimentary in sustained-yield management. As you know, the public pressures generated by two Royal Commissions made sustained yield a popular political concept, with the result that the industry submitted to regulation of cut throughout the province. Finally, we are now superimposing a pulp economy on top of a sawlog economy, which was here first. But you foresters know that such is not intensive forestry, and that it is going to take a lot of pressure from the grass roots level to insure that more of the public funds derived from these coniferous forests are spent to manage them properly. Remember that Mother Nature gave us these forests for nothing, and it is our working capital that is being dissipated. These grass roots pressures are already building up, and if we can succeed in establishing 15 more large pulp mills scattered throughout the province, we will pass from a lifetime of extravagant waste to a future of forced conservation. So, I am firmly convinced that, when you graduates have served your forty years, you will be able to look back with even more satisfaction on the growth of the forestry profession in British Columbia.

However, to get back to the subject of this address, forestry in the past for all of Canada can be summed up in one word -- "none." For 21 frustrating years in the employment of the B.C. Forest Service, this graduate Forest Engineer wondered why he had taken any theoretical forestry.

Actually, until I graduated, I could not afford to work for the Government. Hence, I started out on graduation as a lowly compassman at the munificent salary of \$75.00 per month. This was in 1924. Some eight years later, I fought my way out of Forest Surveys and wound up in Kamloops on Grazing reconnaissance and administration for two years. I used to wonder why I had graduated in forestry, as I wandered all over the Chilcotin mapping the grazing areas and arguing with the ranchers. One thing that training did teach me was how to hold my own in arguments with the most independent and rugged group of individualists I had ever come up against.

I used to wish I could get back to selling timber, because, in those days, the highest bidder took the timber sale and there was no further argument with the Forest Service, whereas in grazing administration a Government man was

always behind the eight ball. As there was never enough Crown range to meet the expanding needs of the cattlemen, the administrator either made one enemy by telling the newcomer there was no permit for his cattle, or he made several bad friends by demanding that they all cut down by a percentage in order to prevent ruining the native forage by over-grazing. How little did I dream we would ever be able to enforce the same kind of regulation against the primary industry of British Columbia. So, we continued cruising timber, collecting revenue and fighting fire as best we could, until the first Royal Commission in 1945.

What were they doing in the rest of Canada? -- either the same kind of wasteful "cut and get out" timber business, or the larger outfits were playing monopoly by acquiring through devious methods far more timber land than they could ever use. So why worry about forestry? In fact, from my experience on the executive of the Canadian Institute of Forestry, I learned enough from the foresters of eastern Canada to convince me that we are indeed fortunate to be practising foresters here in British Columbia. In the east, I heard repeatedly the statement that, as soon as you were promoted to an important executive position in the company, just so soon should you forget your forestry training, except that connected with production.

In Newfoundland, where the two pulp companies enjoy a monopoly and pay no stumpage or royalty, the Balsam Woolly Aphid is epidemic, and will destroy 50% of their pulpwood and 90% of their reproduction.

In the Maritimes, each company was given far more acreage than it needed and, as a result, were prodigal with it. They high-graded the more accessible stands for generations, until in New Brunswick the provincial average mean annual increment is down to 12 cubic feet per acre per year. The properly-managed Farm Woodlots are producing at least 60 cubic feet per year.

I am pleased to note that the new Premier, Robichaud, of New Brunswick has withdrawn enough forest land from the Fraser Company and the International Paper Company to establish another pulp mill.

In Ontario and Quebec, my forester friends tell me, the conservation, or forestry, picture, is, for the most part, equally lamentable. One pulp mill at Port Arthur is transporting logs by water 200 miles through a despoiled area of 800,000 acres surrounding the mill.

I am ashamed to say the Ontario Government has a law which makes the Forest Service responsible for all reforestation and silviculture, and their forest officers go along with it because they couldn't get most of the big companies to do enough forestry anyway. As anyone would know, they now can't get enough funds to do the job.

Recently, the head of the Quebec pulp worker's union was in my office to find out what forestry conditions were like in British Columbia, because the pulp districts of that province were using the excuse that, as their hauling distances were increasing each year, they couldn't raise wages and still compete with their tough B.C. competitors.

One of the brightest conservation pictures east of the Rockies is at Hinton, Alberta, where the Government gave that company what amounts to a Tree Farm Licence and insists they practise forestry. Forester Des Crossley is keeping the directors and shareholders happy by showing them that, with proper forestry planning and reforestation, the average haul distance from the mill in 1994 will be no farther than it was in 1964.