

**Oral History Interview with**

**James C. Evenden**

**Interviewer: Ronald D. Larson**

**Coeur d'Alene, Idaho**

**March 1979**

**Sponsored by the Forest History Society and the USDA Forest Service**

**Edited by Malcolm M. Furniss**

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**Editor's Note:**

I prepared this edited version of the taped interview based on my familiarity with the area and insects and my association with Evenden, who for a time was my supervisor. I have added the footnotes, literature citations, and insertions within parentheses. Passages by Evenden were edited where that seemed needed; the original transcription is on file with the Forest History Society and in my files destined for the University of Idaho Special Collections and Archives Library, Moscow. (Malcolm M. Furniss, Moscow, ID, 2010).

Ronald C. Larson: This interview of James C. Evenden in Coeur d'Alene, Idaho, on March 23, 1979 is part of a joint historical research project on the history of Western Forest Entomology conducted by the USDA Forest Service and the Forest History Society of Santa Cruz, California. The interviewer is Ronald C. Larson. All ownership of this tape recording and copies thereof rest in the public domain.

Larson: Good morning, Mr. Evenden. I would like to begin by getting a brief biographical sketch of your background. Could you tell me when and where you were born?

James C. Evenden: June 19, 1889. McMinnville, Oregon. My early childhood was spent in McMinnville, where my father worked in a bank and my mother taught music. When I was nine years old, my father and his brother moved to a farm a few miles from Sheridan, Oregon, to an area known as Gopher Valley where we lived for a few years. We then moved to a farm seven miles west of McMinnville where we lived until I was seventeen. At that time my father sold the farm and we moved back to McMinnville. I registered in the School of Forestry at the Oregon State Agricultural College, then known as the Oregon Agricultural College. Having worked in saw mills and lumber camps, forestry seemed to be a field that I would enjoy.

Larson: What type of education did you get at Oregon?

Evenden: At that time, the college offered a two year sub-freshman course for non-high school graduates. I registered as a sub-freshman as I had not attended high school.

Larson: How was the school of forestry at that time in Oregon?

Evenden: The school of forestry was relatively new but of a high standard. Under the leadership of George W. Peavy, it was recognized with all forestry schools of the nation. Dean Peavy was a fine instructor. A man of high principles, respected and loved by all his students.

Larson: Do you remember what the curriculum was like at Oregon? Did you get entomological information?

Evenden: The regular forestry course included a half year of general entomology. In my senior year, Dr. V.I. Safro, Entomology Department, developed an elective course in entomology. Several forestry students registered in this course. It covered rather thoroughly the literature available on forest insects. At his request, several of the forestry students took a U.S. Civil Service examination in forest entomology and received fairly good grades.

Larson: What year did you graduate from college?

Evenden: I graduated from Oregon State in 1914 (B.S. Forestry)<sup>1</sup>. Prior to that time, I had worked as a forest guard for two summers on the Umpqua National Forest. I was working under the supervision of forest ranger Otto Weaver. My work was to assist in the construction of a trail

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<sup>1</sup> In 1936, he received the degree of Forest Engineer, equivalent to MF, from Oregon State College. Thesis: Effects of defoliation by the pine butterfly (*Neophasia menapia* Felder) upon ponderosa pine.

along the South Fork of the Umpqua River in the morning and in the afternoon make a foot patrol to several fire lookout points. At that time, the forests were not roaded like they are now.

During the start of the second season, Ranger Weaver was transferred to a forest in the southern United States and I was left in charge of the district. I was still in college. Nothing serious happened--a few spot fires and other minor tasks.

Larson: How many people were in that forest at that time? Were you by yourself?

Evenden: At that time, I was the only one on that ranger district.

Larson: So maybe you were relieved when nothing did happen.

Evenden: Yes, indeed I was. I hadn't had a great deal of experience in fighting forest fires.

Larson: Of course, on the other hand, maybe it was boring too.

Evenden: No. I had something to do every day. I had to make my daily fire patrols. At that time, there were no phones throughout the forest but I was able to contact a forest service employee stationed on White Mountain where he was a lookout. In the afternoons we would flash mirrors at each other which showed that we were both alive and on the job.

Larson: Did you have any consciousness of entomology at that time?

Evenden: No. The only knowledge of forest entomology I had was the course I had taken with Dr. Safro.

What did you do immediately following graduation?

Evenden: I had taken a Civil Service examination and had an appointment as a forest ranger on the Oregon National Forest. The headquarters were in Portland, Oregon.

Larson: What was your experience on the Oregon National Forest?

Evenden: After graduation, I reported to Supervisor Sherrard in Portland who told me very briefly that I was to go to Lookout Mountain where I was to build a cabin on top of the mountain, with windows all around. This work would be under the supervision of Ranger Cooper who was in charge of the Parkdale, Oregon, ranger station. As I received these instructions, he told me I'd need a horse and a pack horse. I had no idea where Parkdale Ranger Station was and so I asked the clerk as I left Supervisor Sherrard's office and he advised me that the ranger station was about 11 miles from Hood River, Oregon. With my small amount of money, I purchased a riding saddle and a sawbuck pack saddle from a pawn shop and took a night train to Hood River. There I hoped I would be able to buy a saddle and pack horse. Fortunately, in the morning I found a livery stable that had horses for sale. I purchased a nice riding horse for \$40 and a lame pack horse for \$15--an expenditure which practically exhausted the small amount of money I had available. With my horses, I rode to Parkdale and reported to Ranger Cooper. This was on the

first of July and I remained at the Ranger Station doing odd jobs until after the 4th of July, when with Ranger Cooper, a Forest Guard by the name of Stanley Walters, and I moved to Lookout Mountain Guard Station. Ranger Cooper stayed with us for several days to help with the construction of the cabin, then Walters and I were left alone to complete the structure. Walters stayed until the cabin was fairly well completed and all the building material was on hand. The existing guard station was located in a small mountain meadow about one half mile below the summit at the Mountain. Logs were skidded up the mountain with our horses and the necessary lumber and windows packed in from outside areas. In due course, a 10 x 12 foot cabin was complete. There were windows on the side and back of the cabin with an Osborn fire finder located on a low tower out in front of the cabin. As the cabin was completed, it became the terminal for several telephone lines from other areas.

Larson: Was this a new development using telephone lines at this time?

Evenden: Yes.

Larson: So, it was probably pretty exciting. It seems rather uneventful now but it must have been quite an experience.

Evenden: It was quite interesting. As the lines were dead-ended at the cabin, I was confronted with the construction of a switch board. With a sack full of switches and a few extra telephone bells, it was done. I could work it but I doubt if anyone else could do so. Apart from building the cabin, the season was uneventful. There was one small fire and one legal case.

Larson: Could you describe the legal case?

Evenden: A logger caught his truck load in our telephone wire, which was apparently too low, so he proceeded to cut it. I don't know what the conclusion was as it came to court after I had left the forest.

Larson: Was there some animosity amongst the private loggers and the Forest Service at that time?

Evenden: I don't think so.

Larson: So that was kind of unusual occurrence -- his cutting the telephone line.

Evenden: Another interesting experience I had was that after a two day ride and a night spent in the woods, I discovered that the dust raised by a band of sheep going into their bedding ground at night was not a fire. I could see this big dust cloud going up which I thought was smoke.

Larson: How long did you stay in this cabin working that job?

Evenden: I was there all summer. I would like to go back and state that the Civil Service examination that I had taken in forest entomology while in school (senior year), had been practically forgotten. In late July I was offered an appointment with the Bureau of Entomology

as an entomologist ranger. The salary was to be \$75 a month with headquarters at Missoula, Montana. As I was to be furloughed from my Forest Service appointment during the winter, I decided to accept this offer and find out what entomological rangership was all about. I was making \$1100.00 per annum as an Assistant Forest Ranger so it was quite a step down. I gained the approval of Supervisor Sherrard as to my accepting this appointment--as I would complete my assignment on Lookout Mountain. However, my position would still be open on the Oregon National Forest (now Mount Hood N.F.) and I would return in the spring of 1915. Although I didn't realize it at the time my career in forest entomology was launched with my acceptance of this appointment.

Larson: Could you describe, then, your first going to the station that you were to work on entomology.

Evenden: I reported to Josef Brunner, who was in charge of the forest insect field station at Missoula. I knew very little about Mr. Brunner and did not spend much time with him. He had been working in entomology for several years. I do not know if he was a trained entomologist and somehow I have the idea that he was appointed through his interest in the loss of timber around Kalispell, Montana (but see Furniss 2003).<sup>2</sup>

Mr. Brunner's instructions to me were very brief. In fact, there were practically none. He advised me that I'd be working with Al Wagner and that a small camp was already established near the small village of Potomac, Montana. I met Mr. Wagner the following morning and with our personal belongings and equipment from the office, we traveled by logging train from Bonner, Montana to Potomac, and then by a horse-drawn U.S. Mail stage to the so called "established winter camp." To my dismay, I found that the camp consisted of a small 7 by 9, V-shaped tent pitched on the ground, some bedding rolled up in one corner, a fire ring of stones out in front with a frying pan and a few other cooking utensils. And incidentally, there was no food to cook. I don't know what I expected but this was not it. We returned to Potomac where we spent the night and the following day, we rustled some old lumber, an old cooking stove with no legs, and a heating stove and returned to the camp site.

Larson: How did you get these things: Did you literally rustle them?

Evenden: We bought some of them but most of it was given to me by the people who lived in this little town.

Larson: I imagine when you first saw your camp, you felt like leaving and then the people in the town made you feel like staying again.

Evenden: I think I would have returned home if train fare was available. However, in a few days the two of us developed a rather comfortable winter camp with a sleeping tent and a tent in which to cook and live in.

Larson: How did you begin the entomological work there? Had you had specific instructions to follow or were you to proceed on your own?

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<sup>2</sup> Also, see Furniss 2007 for additional reference to subjects involved in this interview.

Evenden: I assumed that Mr. Wagner had instructions as to what we were to do. So, after the camp was completed, which took several days, we started out and as we left the Potomac Valley or the Potomac Basin and reached the stands of lodgepole pine, I saw for the first time a pitch tube on a tree killed tree by the mountain pine beetle. It was a satisfaction to realize that I could identify the insect responsible. In this area the infestation was very heavy with pitch tubes on nearly every tree. Just what we were supposed to do, I never did find out--I guess to find out the extent of the infestation and determine the areas of heavy infestation.

Larson: Now pitch tubes are caused by which insect?

Evenden: When a bark beetle bores through the bark of pine trees and constructs an egg gallery between the bark and the wood, there is a flow of pitch through the entrance of the gallery. The pitch which forms on the bark is called a pitch tube.

Larson: So you knew it was a pine beetle.

Evenden: Yes. I was able to identify the insect by its gallery pattern. As most all tree killing bark beetles have their own particular gallery pattern, the insect can be identified in this manner.

Larson: Which beetle was this?

Evenden: The mountain pine beetle, *Dendroctonus monticolae* Hopk (presently, *D. ponderosae* Hopk).

Larson: So, did you survey the extent of damage and then report in or what did you do?

Evenden: Soon after that, I found that I was supposed to be working alone so I covered as much of the territory as I could up to the Continental Divide, mapping the areas of heavy infestations. I made no effort to count the number of infested trees but I made rough maps of the heaviest infestation and considered my job done.

Larson: What was done to try and turn back this epidemic of mountain pine beetles? What types of methods did you use and what degree were they successful?

Evenden: This infestation started around Kalispell, Montana in 1911 or earlier and spread down the Continental Divide through the lodgepole pine stands into the Targhee and Wyoming (now Teton N.F.?) National Forests of Idaho (Evenden 1944, Evenden & Gibson 1940). Control measures were attempted. In some areas small numbers of trees were treated and large numbers in other places. The first method used was to peel the infested trees with long handled peeling spuds. The standing trees were peeled as high as twelve to fourteen feet exposing the insects beneath the bark. During subsequent years, other methods were used. Trees were felled, infested logs skidded into decks with horses and the decks burned. Sprays which penetrated the bark and killed the insects beneath were used upon standing trees. Fuel oil was sprayed upon the standing infested trees and the trees burned.

Larson: How long a period did this take place?

Evenden: Starting in 1911 and 1912, it continued for many years--I would judge until about 1935 or 1940.

Larson: So, it was a long process. Were you successful eventually in turning back the infestation?

Evenden: I'm afraid the results were negative because the numbers of infested trees were so great that the small amount of the infestation we were able to destroy was merely a drop in the bucket. Some success was had on the Grand Teton National Park in the protection of trees with high aesthetic value by putting a screen around the base of them. That was merely for the protection of individual trees.

Larson: Could you demonstrate the extent of the insect infestation at this time?

Evenden: Not the full extent of it but I can give you a good example. I traveled with some officials from Washington, D.C. through the Yellowstone National Park, the Grand Teton National Park, the Beaverhead National Forest, and over the Continental Divide down the Bitterroot River to Missoula. The trip through the Beaverhead National Forest was a hundred miles or more and in every direction the mountain sides were red with the discolored foliage of the insect killed trees.

Larson: So almost the whole forest was being wiped out.

Evenden: All of the larger trees were being destroyed.

Larson: How would you rate this in terms of historical epidemics--this must have been one of the largest?

Evenden: Certainly one of the largest bark beetle epidemics in our history.

Larson: Going back to 1915 when you had been working on surveying, you started to tell me about the heart rot that you found.

Evenden: For something to do, in 1915 I had visited the logging operation of the Anaconda Copper Mining Company in the Potomac Basin and noticed considerable heart rot in some of the larger Ponderosa pine trees. I was interested as it seemed to be rather pronounced. I attempted to trace it back to the work of an insect that worked in the terminals of young Ponderosa Pine reproduction. I had no success, but it did keep me busy for a while.

Larson: How long were you at Potomac?

Evenden: I was there until March, at which time I was confronted with the problem of returning to my Forest Service appointment on the Oregon National Forest or remaining with the Bureau of Entomology. As I could see no future in entomological rangership, I decided to return to the



Forest Service. I couldn't see under the present set up where I was getting any supervision or any guidance. I had no authority. I had no opportunity to meet forest service personnel or lumbermen and I just couldn't see any future there for me whatever. I decided to go back to my Forest Service position which was still available. I also received an offer from the District Forester in Missoula, Montana to serve as insect control leader for the district. I have forgotten the exact title of that position but this offer was also attractive to me. However, my mind was finally made up by Dr. A.D. Hopkins (Chief of Forest Insect Investigations, USDA) who wrote to me from Washington, D.C. saying that if I would stay with the Bureau, I could go to northern Idaho and establish a sub-station to the Missoula station. This offer appealed to me because it put me on my own so I decided to accept.

Larson: Could you describe Hopkins? There's very few people around now that could remember him personally. He must have been an inspiring man.

Evenden: I had the pleasure of meeting Dr. Hopkins. I found him to be a very enthusiastic well trained, kindly gentleman. I'm sorry I didn't have the opportunity to know him better. His bulletin "Bark beetles of the Genus *Dendroctonus*" stands as a solid reference.

Larson: When you accepted the position to set up a sub-station in Idaho, where was the sub-station?

Evenden: In Coeur d'Alene, Idaho.

Larson: You were to stay here, too, weren't you throughout your career?

Evenden: Yes, I arrived in Coeur d'Alene in March 1915. My assignment which I received from Dr. Hopkins was to determine the status of forest insects in this region, to establish the seasonal history of the bark beetles, and to obtain phenological records for Dr. Hopkins bioclimatic law.

Larson: Could you explain that--bioclimatic law?

Evenden: As I understood the law, and I'm not too thoroughly versed on the subject, it is the relation between temperatures, elevation and the development of plant and insect life. As the elevations vary, so will the development of plant and insect life.

Larson: What did you find locally in regard to the bioclimatic law?

Evenden: Well, I fear that the area I covered was too small to show any definite results. There was very little difference in the development of plant life for different elevations in this particular region. I don't think that the variations in elevations and exposure were great enough.

Larson: When you first came to Coeur d'Alene, what was the city like?

Evenden: Vastly different than what it is today. No roads in the forest at all. The city was small. Transportation around the lake was by boat. Boats left in the morning and afternoon, no

automobiles. It was mainly a lumbering town. There was a road between Coeur d'Alene and Wallace and Kellogg known as the Mullan Trail which was built by Captain Mullan.

Being alone with no funds, all I had for a sub-station and an office was a room in a private home - a large room. I worked from that room, ate my meals at restaurants. Until after the war.

Larson: You also lived in the same room you worked in?

Evenden: Yes.

Larson: Could you explain the research you did and start with what you began with when you first got here and continue on.

Evenden: My assignment was to establish the status of and the damage to the forests of northern Idaho by insects, to establish the seasonal histories of bark beetles, and to obtain the phenological records. I worked on these assignments until May 12, 1917, when I was granted leave without pay to attend the Officers Reserve Training Camp at the Presidio, San Francisco, California. I had previously taken an examination at Ft. George Wright, Spokane, and received a commission as a second lieutenant in the Officers Reserve Corp.

Larson: What did you do during the war?

Evenden: After the training camp, I became captain in command of "G" Co. 363rd infantry, 91st division, and stationed at Camp Lewis, Washington. We went overseas in June 1918 and I returned in March 1919 to San Francisco. I returned to Coeur d'Alene on June 16, 1919 with the Bureau of Entomology as a scientific assistant. Prior to my return, I corresponded with Dr. Hopkins. He had written that he had planned to assign me to a field station at Ashland, Oregon, but he had written John Miller who was in charge of the Ashland station. Mr. Miller had suggested that it would be desirable to have me stationed in Coeur d'Alene. Dr. Hopkins concurred and stated that there was much work to be done in the Coeur d'Alene region and along the coast of Washington and perhaps a little later some work may be done in Alaska.

Larson: What was being done here in the war years while you were gone?

Evenden: Not a great deal. Alec J. Jaenicke, Forest Service, Portland, Oregon, visited this area a time or two but I have no record of what he did or what was accomplished by his visit.

Larson: At this time were there any major insect problems in the area, in the epidemic stages or what were the conditions?

Evenden: There had been heavy losses in the white pine and other timber stands of northern Idaho. At that time, I knew very little of what was going on in the forests of northern Idaho. I had no money or authority to travel, so as I stated, my work was limited to foot travel from Coeur d'Alene.

Larson: So, what type of work did you set out to do when you got here in 1919?

Evenden: Working: with the Forest Service and timber owners in determining the status of insect damage in their timber stands, planning of control methods and working on method of control for bark beetles and defoliating insects.

Larson: Could you explain to me in a little more detail how the three groups cooperated, the Forest Service, the Bureau of Entomology and private timber owners. Did you have a place where you met? Was there some type of organization which you worked through?

Evenden: There was, and still is, an organization known as the Western Forestry & Conservation Association. All phases of timber ownership were represented at these meetings in which we participated. If the problem was on private land, we contacted the private owners. If on public land we contacted the public agency responsible. We paid no attention to ownership. We worked with the private owner--answered their calls and inspected their timber lands as well as public ownership.

Larson: I take it there was no single formal organization that dealt only with forest pests.

Evenden: Not at that time. In later years, we did have what was called the Rocky Mountain Forest Pest Action Council.

Larson: In 1919 you began to assess insect populations and what sort of damages were being done. What were the problems at that time?

Evenden: Most of my work was in the white pine areas where losses were quite heavy. We did considerable control work in the white pine stands of Coeur d'Alene National Forest. The control measure we employed was to fell and peel the infested trees.



The mountain pine beetle was a major cause of white pine mortality in Idaho and various methods were developed in attempts to control it. One such method involved peeling bark while the broods were immature as shown here on the Coeur d'Alene National Forest ca 1930. Coeur d'Alene Forest Insect Laboratory photo 488 by H. J. Rust. (Western Forest Insect Work Conference Archives)

Exposing the immature larvae from beneath the bark destroyed them. After the larva mature into mature beetles, we had to stop work. An interesting phase of that control measure is that ants, shrews, and field mice fed upon the exposed larva.

Larson: You talked about felling and peeling the trees. Did these control measures have any results?

Evenden: I think they were fairly successful in the Coeur d'Alene National Forest. In fact, I think the control materially reduced the subsequent losses. However, we may have caught the outbreak on its downward path. It may be that we did our work at the time when the infestation was on its way out. It's very difficult when you're dealing with nature to tell just what you have accomplished.

Larson: When you came back here in 1919, what staff did you have in the station?

Evenden: No assistants at that time. I was alone and remained alone for two or three years. On my return to Coeur d'Alene, John Miller, who was in charge of the Ashland, Oregon station<sup>3</sup>, came to help me establish a Forest Insect Laboratory here. I've always been very grateful to him

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<sup>3</sup> Wickman, B.W. 1987. Early Forest Insect Research in the Pacific Northwest: Ashland Field Station. 1912-1925. *Oregon Historical Quarterly*. Spring 1987, p 27-48.

for arranging to have me at Coeur d'Alene because I have enjoyed working in this region a great deal. We rented an empty house for which we paid eight or ten dollars a month rent. That was called the Coeur d'Alene Forest Insect Station.



Evenden at Coeur d'Alene Field Station 1921.  
(Western Forest Insect Work Conference Archives)

I discussed with Mr. Miller the program at the station, which was to involve the study of all destructive forest insects, the extent of their damage, their potential control, and the importance of insects to the practice of forestry. That was the program set up for the forest insect station. As Dr. Hopkins stated there's much work to be done in this territory. Incidentally, the territory assigned to the Coeur d'Alene Laboratory at that time included Regions 1 (Idaho, Montana) and 4 (Utah, Nevada) of the Forest Service. A few times we slipped over the border into the northern forests of Region 2 (NW Wyoming).

Larson: Did the Bureau of Entomology generally follow Forest Service Regions?

Evenden: Yes, pretty much so. The station in Portland, I believe, confined its work to Oregon, Washington and Alaska (Region 6). In Berkeley, I believe they adhered pretty closely to California (Region 5) and I'm not sure about the other laboratories that were subsequently established (Fort Collins: Regions 2 & 3, Colorado, New Mexico, Arizona, and Black hills, SD)

Larson: How did you begin to meet all those requirements of your mission?

Evenden: Well, two years after the start of the Laboratory, I worked alone, then Henry J. Rust, a professional photographer, was hired. He took a Civil Service examination and was qualified as an entomological aid. He was a self-made naturalist. I can't think of any better title than that. (Rust was at the lab from July 1, 1921 to retirement as Senior Scientific Aid on June 30, 1943).



Henry J. Rust, a commercial photographer,  
was hired by Evenden in 1921 as an entomological aide.

Then,--not in proper sequence, the following men came to the station--A.L. Gibson, L. G. Baumhofer, Don LeLeon, Bill Willford, Reginald Balch, Tom T. Terrell, Bob (Robert L.) Furniss, W.D. Bedard, Sr., Roy Nagle, Robert E. Denton, Phillip C. Johnson, Galen Trostle, Red McComb, and David G. Fellin. A lot of them passed through here. They were assigned here because I needed them, I guess, then they went on to bigger and better jobs.

Larson: You talked about Rust coming first as an entomological aide. How did he assist you in your work?

Evenden: He was an assistant, a jack of all trades. There was no task too great for him. Somehow he always got the job done.

Larson: You had some other people that learned while on the job. Tom Terrell was one.

Evenden: Yes, Tom Terrell was one of the top men at this station. He was employed (in 1926) as a spotter or marker of infested trees to be treated on a bark beetle control project in the Big Hole Basin, Montana. Later in the season I employed him to work on forest insect surveys. His industry and interest were recognized and he was given a temporary appointment in the Division of Forest Insect Investigations (to which the Coeur d'Alene Lab belonged). This appointment was made permanent later and he became an important and valued employee of the Division. He had had no previous entomological training.



J.C. Evenden (left) and T.T. Terrell, Coeur d'Alene Forest Insect Laboratory, 1947.  
(Western Forest Insect Work Conference Archives)

Larson: In the years through the 1920s were there any major epidemics?

Evenden: The mountain pine beetle infestation, continued to spread down the Rocky Mountain areas into the Targhee National Forest, Grand Teton National Park, and the Wyoming National Forest.

Larson: When the depression hit the country in the thirties, did you get much help from the Civilian Conservation Corps?

Evenden: Yes, we did. The CCC did control work in the Yellowstone National Park and Coeur d'Alene National Forest and I'm sure other areas which I do not remember.

Larson: Were you assigned certain CCC people or did you work with the Forest Service in that regard?

Evenden: Both. We worked with the Forest Service, and also had small crews assigned to our station. We used them on research teams as much as possible.

Larson: Could you tell me about some experiments and novel approaches to treatments that you perhaps looked into during this period--the twenties and thirties.

Even den: Many ideas were suggested and most of them were tried if at all feasible. We had bark beetle control as our primary objective. We had been conducting control work in practically all the national forests of the region and desired to improve these methods. Some measures seemed to work and others were failures. Anyway, we worked with methods that were available. Many methods of treatments were used. We were constantly striving to develop cheaper and more effective techniques. I mentioned that we felled infested trees and peeled them. We applied sprays to standing and felled infested trees that penetrated the bark and killed the insects beneath. Trees were peeled and the bark burned, because the larvae of some bark beetles are imbedded within the bark and peeling does not expose them. All of these methods were laborious, expensive and biologically questioned.

Larson: How so?

Even den: When you destroy a tree infested with bark beetles, you destroy everything within the tree which includes the natural enemies of the injurious insects. So, you merely reduce the volume of the infestation rather than its potential to increase. Unfortunately, we had no method of control whereby we could destroy the injurious insect and save the parasites and predators.

Larson: So you worked during these years to try and do that. Do you remember any specific experiments?

Even den: Yes. Many ideas were advanced to bring about a solution to this problem and many experiments were conducted having as their objectives the improvement of existing methods of control and the development of new procedures. We made a great number of attempts to inject poisonous solutions into infested white pine trees, hoping to destroy the insect broods beneath the bark prior to the entrance of parasites and predators. Holes were bored into the tree and the solutions placed in cans and connected to the hole with a rubber tube. Unfortunately, we found that although the tree would take up some of the solution, it only did so to the width of the hole. If we bored an inch hole in the tree, the tree absorbed the poison to a width of one inch only; no lateral absorption. This was proven by using a dye with the solution.

Larson: So, to be effective, it would have to essentially skirt the whole tree.

Even den: We tried peeling a strip of bark around the tree and cutting a shallow saw kerf into the cambium layer. Then a rubber band was placed around the saw kerf and the poisonous solution poured into cup made by the rubber band. Apparently, the attacks were too old and as the trees failed to absorb the solution. The reason for this failure was assumed to be the blue stain fungus carried into the tree by beetles and which turns the sapwood blue. The fungus creeps through the cellular structure of the wood and apparently blocked the transmission of the fluid.

We were also interested in the distance that beetles fly or are carried by air currents. This was important because we were trying to prevent the spread of beetle into un-infested areas.



Larson: Something like a fire break in other words?

Evenden: Yes. To do this, Terrell flew old weather bureau box kites -- attached to piano wire and handled with a winch fastened to the back of a pickup truck. Attached to these kites was a ten foot net with a cyanide jar at the tip end of it. These kites were flown forty-five miles from the nearest timber in prairie regions near Dillon, Montana. Although only one bark beetle was captured it did demonstrate that bark beetles either fly or are carried by air currents for long distances. Incidentally, with a kite up a thousand or more feet, a ten foot opening is not a very large portion of the atmosphere and I thought that the project, although rather small in its scope, was successful.



Tom Terrell (kneeling) at winch used to raise a U.S. weather kite containing a net (lower left) to 8,000 ft above ground during study of mountain beetle flight in 1923.  
(Western Forest Insect Work Conference Archives)

Then we gave considerable attention to what sort of weather happened in the winter time which resulted in the death of all bark beetle broods in the trees in certain areas. We found that insects would be killed in the fall at a very low temperature but as winter approached a cold hardiness developed which withstood normal temperatures. This work was done in the laboratory with a low temperature cabinet.

Larson: What temperature killed them--the broods?

Evenden: That varies. In September, we got a hundred percent mortality at ten degrees above zero and no mortality in December at twenty degrees below zero. By placing dry ice in our cabinet we were able to reduce the temperature down to a point where the larva would freeze solid but if you held them in your hands for a few minutes they would thaw out and come to life.

Larson: So, during the warm months, they had high mortality with cold temperatures. In the winter months, they could withstand extremely low temperatures and survive.

Evenden: That is correct. A study of weather records showed that on particular years we had abnormally warm temperatures during the winter months for a short period which undoubtedly created activity of the bark beetles beneath the bark of infested trees. Then the weather turning cold or back to normal resulted in mortality. It allowed us to study weather records and to predict what might or might not happen. So, perhaps, an epidemic might end in the winter time if there were abnormally warm temperatures or a freezing period in other times. For example, in the warm months if it got ten degrees below zero, it would kill all of the bark beetles.

Larson: In trying systemic control methods, you talked about using a rubber band; did you try any other means in getting this into the tree?

Evenden: Yes, we used a strip of tin which was crimped on one end like a stove pipe so that the other end could be cut off and fitted into the crimped portion and clamped to make it water proof. It was tacked around the bottom of the saw kerf and then the poisonous solution poured into this cup. Although some of the fluid was taken up by the tree, we had no success in destroying the bark beetle. It was expensive and would have been prohibited to use if it had been successful.

Larson: What other methods were tried--novel approaches. Did you try any attractive methods--attract insects in to kill them?

Evenden: We tried trap trees, yes, with the spruce bark beetle (*Dendroctonus rufipennis* (Kirby)) infestation, a number of trap trees were cut on the Kootenai National Forest. I know they were heavily attacked by the beetles but what results could be claimed, I have no idea. It was done under our supervision but aside from this knowledge the felled tree would attract the beetles the results were negative. The logs were picked up milled and apparently had no effect on the spruce infestation.

Larson: Did you try any preventative measures?

Evenden: Not much, except that we had success in putting a screen over the lower ten or twelve feet of the trunk of lodgepole pine trees that were of high value around buildings. Apparently, the first attack of the beetles occurs at the base of the tree and by preventing that attack we were able to prevent the attack above the screen.

Larson: You met and married a local Coeur d'Alene girl<sup>4</sup>. When did you meet her?

Evenden: When I came to Coeur d'Alene in 1915. We married two weeks before I left Camp Lewis to go overseas.

Larson: To continue your story into the 1940's, I'm sure a lot of these things cover this period that you were here. Was there a change with the war in the status of the work in forest entomology?

Evenden: No, I don't think so. We were able to get appropriations to do what we wanted to do. They were not overly generous. No appropriations ever are. At that time we were confronted with a terrific spruce bark beetle epidemic which kept all of us quite busy for a number of years. That resulted from a wind throw, in November 1949, a severe wind storm with velocities of 60 to 100 miles per hour tipped over a large number of spruce trees throughout the region. This was not known until it was found that large areas of standing spruce were being killed by the progeny of beetles that had bred in the wind throws.

Larson: The first generation being the down trees.

Evenden: Yes. Tremendous volumes of spruce were killed throughout the northern forests of Region 1 of Idaho and Montana which resulted in control measures and salvage logging. Roads were built into these areas to salvage log the infested spruce. Control measures were adopted. We used penetrating sprays applied to the trunks of infested trees. In the back areas (inaccessible) the emulsifiable spray concentrate was packed to the control areas in five gallon cans. Large volumes of infested spruce were salvaged whenever possible. Control measures were conducted in the areas that could not be reached by logging. It is not known if it saved much timber as a result of control work. It was laborious, expensive, but they were areas that couldn't be logged and an effort was made to preserve the remaining timber stands. Some success, of course, was accomplished but whether it justified the expenditures, one never knows.

Larson: What type of chemical sprays were you using?

Evenden: We used orthodichlorobenzene.

Larson: You retired in 1955 and through those years did you use DDT--did you come to use it?

Evenden: Yes, we did.

Larson: I understand it is not too effective for bark beetles.

Evenden: No, it has no effect whatsoever on bark beetles.

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<sup>4</sup> Ella Kate Bishop. They had two children: John Thomas, a dentist, Born 1919 (?), deceased Nov. 1989; and Joan Merideth, born 1927, deceased 1939 from effects of treatment with sulfa (probably influenced JCE's subsequent involvement on the Board of Directors of Kootenai Memorial Hospital).

Larson: What about the defoliating insects--why don't we go back in time and deal historically with those.

Evenden: We had defoliating insects problems confronting us at all times. The (western) spruce bud worm (*Choristoneura occidentalis* Freeman), supposed to be an eastern insect, was found to be here in the West. It was first discovered on the Kaniksu National Forest. Since that time, it has spread and been a very important insect throughout the northwestern United States. Perhaps the first defoliating outbreak which we had was an outbreak of the lodgepole sawfly (*Neodiprion burkei* Middleton).

Larson: Could you explain how the sawfly works? How does he attack the foliage?

Evenden: Sawfly larva feed upon the foliage or the trees that they attack. The larvae are about one inch long. The outbreak was in the lodgepole pine stands in the West Yellowstone area. This situation was of much importance as West Yellowstone is one of the main entrances to Yellowstone Park, with the road going through the infested area. A high power sprayer was obtained from the eastern United States and a strip two hundred feet wide along the highway was sprayed with lead arsenic. This destroyed the insect on that strip. Fortunately, I think the infestation was about over but considerable damage occurred in areas near the sprayed areas.

Then, we had an outbreak of the spruce budworm in the Cody Canyon of Wyoming - the eastern entrance to the Yellowstone National Park. A small fire pump was used and a few trees around one of the dude ranches were sprayed with lead arsenate with very good success. The following year, an appropriation was obtained and a high power sprayer obtained from the Gypsy Moth Control Organization. The trees around all of the dude ranches along the Shoshone River were sprayed. This was very successful and no trees around the dude ranches were lost. In the back areas the kill was almost one hundred percent and during subsequent years, there was a bad fire in one of these areas. Practically, one hundred percent of the timber was killed.



Spraying lead arsenate on Douglas-fir infested with spruce budworm, Cody Canyon, Wyoming ca 1930. (Western Forest Insect Work Conference Archives)

We had several other small aerial spray projects against the spruce bud worm in an effort to prevent losses or timber. Some of them seemed to be successful. Others, the success seems to be questionable. In fact, it's difficult-- in my opinion--to actually determine the results of forest insect control because one loses the evidence as to what would have happened had there been no control. We do know that these outbreaks do sometimes die down and other times they don't.

Larson: What about some of the other defoliating insects?

Evenden: I'm going to switch now to the largest aerial spray project in the West at the time. This was to control an outbreak of the Douglas-fir tussock moth (*Orgyia pseudotsugata* McDunnough)) in northern Idaho in 1947. Some 415,000 acres were sprayed within the privately owned and publicly owned forests around Moscow, Idaho (Furniss 2004). The headquarters of this project were located at the University of Idaho. The results of this project, I think, were worthwhile. As far as I know, no timber was lost within the areas sprayed at that time. We sprayed with DDT. This was the first large scale use of DDT to control a forest insect in the West.



Ford Trimotor spraying DDT on forest infested with the Douglas fir tussock moth, 1947  
(Western Forest Insect Work Conference Archives)

Larson: When you got the DDT, what did you know about it?

Evenden: We were told that it was one of the greatest discoveries of that period; that it was a spray that worked on the nervous system of insects and they subsequently died. We were advised to apply it at one pound per acre. It was very effective. A few minutes after the spray had been applied, the insects would drop to the ground.

Larson: Did you have any harmful side effects in the spraying?

Evenden: We had no record of harmful effects.

Larson: Did you do any monitoring? I know you didn't suspect any sort of side effects but I was just wondering, did you monitor cattle or anything like that?

Evenden: No. We had a few complaints but they were dismissed as being unimportant. Department of Fish and Wildlife inspected some of the streams and reported there were some crayfish found to be dead but no dead trout. We tried not to spray too heavily along the streams, but undoubtedly some of the spray got into the water.

Larson: I wonder what kind of long term effect this could have had on bird populations or within the water system?

Evenden: That we do not know.

Larson: No one has tried to monitor it.

Evenden: No. Not with this project.

Larson: How do you feel about that--the use of DDT?

Evenden: I don't think it should be used. We have to go along with people who are trained in that sort of thing and do not recommend its use.

Larson: There's some debate it seems as to whether—

Evenden: Yes, there is but I must concur with the results gained from the studies that have been made.

Larson: This is one example you can actually take credit for stopping an epidemic because it was so visible.

Evenden: How much of that credit is due. I don't know. Perhaps I'm belittling our efforts but I'm speaking frankly to you. We do know that those outbreaks die down. We never have had an outbreak of this magnitude--prior to this one. So we have no records of what could have happened had there been no control. We did have records of small outbreaks of the Douglas fir

tussock moth consisting of some fifty to a hundred acres or more that resulted in a heavy kill of the timber but they died down without control.

We've attempted to control defoliating insects in a small way through the introduction of parasites. A small outbreak of the Douglas fir tussock moth occurred on the Colville National Forest north of Spokane and a shipment of predacious Calosoma beetles (probably *C. sycophanta* (L.)) was obtained from the Gypsy Moth area in the eastern United States and liberated in this area hoping they would become established. It is a large, colorful beetle. A subsequent examination revealed the wing covers of the beetle (killed by predators?)--but no results of colonization whatsoever and the outbreak died down. I cannot believe that the introduction of this handful of beetles eliminated that outbreak. Then the same thing occurred with an outbreak of the tussock moth near Sun Valley, Idaho. Two species of parasites were obtained from the Gypsy Moth area in the eastern United States. The names are available and can be obtained from the records if they're needed. The parasites were liberated in this small area of infestations, as I said in the hills near Sun Valley. Again, unfortunately, we returned to the area the following year, the outbreak had died down and no tussock moth larvae were available from which to rear the parasites if there were any.

Along that same line, we reversed the procedure and shipped a large number of over wintering cocoons of the two-lined sawfly (apparently, *Anoplonyx laricivorus* (Rohwer & Middleton)) to the parasite laboratory at Beltsville, Maryland. This sawfly outbreak was found just south of the Canadian border on the north fork of the Flathead River. As this was supposed to be an eastern insect, the objectives of this project was to determine if in moving from the eastern United States it had acquired any new natural enemies, and if it had carried the eastern ones with it. I never did hear the results. That in a measure is the story of defoliators. There are several other species of sawflies that worked on larch and since my retirement there has been an insect, the larch casebearer (*Coleophora laricella* (Hübner)) that has gained considerable prominence<sup>5</sup>.

Larson: You never had any outbreaks of needle miner or any of those other defoliating insects?

Evenden: Yes, we had needle miner damage in the lodgepole pine in Yellowstone Park but not of any importance. They're usually associated with some other insect. (Strangely, JCE did not mention the pine butterfly (*Neophasia menapia* (Felder and Felder)), although he published on an outbreak in the McCall, Idaho, area; also see footnote 2).

Larson: You were able to stay here in Coeur d'Alene throughout your whole career.

Evenden: Yes.

Larson: That's very unusual for any government employee, it seems.

Evenden: Well, may I be facetious and tell you why?

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<sup>5</sup> Discovered at St Maries, Idaho, in 1957 by Richard F. Schmitz and David G. Fellin, graduate students in Forest Entomology, Oregon State University, en route to Missoula, MT, for summer employment with the lab that had been transferred there from Coeur d'Alene after Evenden retired in 1955 (Furniss 2007).



Larson: Sure.

Evenden: I wasn't bad enough to be fired or good enough to be wanted by anyone else.

Larson: I'm sure that's not true.

Evenden: Well, I'm not sure. We were in this so called wild country up here, and I think they just thought they'd leave "this fellow" up here and he'd be alright. I was extremely fortunate. Staying here permitted me to know the people I worked with. It permitted me to know the lumbermen and my Forest Service, land management and Park Service associates. It permitted me to know and trust them and they apparently trusted me. I was grateful that I was permitted to stay here all the time.

Larson: While talking about your Forest Service friends - you retired in 1955 which was shortly after the Bureau of Entomology fell under control of the Forest Service. The Bureau of Entomology became part of the Forest Service. How do you feel about that change?

Evenden: I was it little upset at first because I felt that perhaps forest insects might lose by it. In this feeling, I found that I was entirely wrong. The importance of forest insects seemed to have the same support. I had no feelings of regret after finding what was going on. We became a part of the Intermountain Forest Experiment Station with headquarters in Ogden, Utah. We could not have received better treatment, more courtesy, than was received from the experiment station personnel. Prior to that time, I had worked very closely with the men in forest management who were responsible for the actual control of forest insects, and I could see no difference in our relationship.

Larson: Before then, you had worked on any forest land wherever there was an insect problem; after you were on the Forest Service, did you continue to work in that way?

Evenden: It made no difference whatsoever.

Larson: You still worked on the national parks and forests?

Evenden: Yes, wherever I was called I went freely.

Larson: That's a good point. Could you think of anything else of your entomological career that you'd like to bring up?

Evenden: No, I don't at this time. I'm very grateful to the men who worked at this laboratory. They were all fine men that I enjoyed and respected very much. I am grateful and always will be for the courtesy given to me by my friends in the timber management areas both public and private. I'm indebted to them for their hospitality on my travels--a debt that I never had the opportunity of repaying.

Larson: They never travelled through here?

Evenden: Once in a while and those that did would most always stop. One of the most wonderful days of my life was my retirement party given here at which time people came from Idaho and Montana.

Larson: That's the way a retirement party should be.

Evenden: Yes. It was very gratifying.

Larson: I know you've managed to stay busy since that time of retirement. Would you like to tell a little bit about that?

Evenden: Yes, I have been busy. I was always interested in civic activities Camp Fire, Boy Scouts, Red Cross, DeMolay, etc. Upon retirement, I became a member of the board of trustees of the Lake City General Hospital--a small thirty-two bed hospital which was the best Coeur d'Alene had at that time. I found this to be a very interesting experience and stayed with this civic work until February 1978 when my term of chairman of the board of directors Kootenai Memorial Hospital terminated. In the meantime we had built and developed a modern, up to date, one hundred sixty bed hospital which is the medical center of north Idaho--an institution of which Coeur d'Alene is very proud. It has been a great pleasure for me to have had a small part in the development of this institution. I put in a lot of time and it was a very gratifying experience. At the present time, I am pretty much out of everything. In fact, I think I have now reached the rocking chair status which I am thoroughly enjoying.

Larson: You are how old now?

Evenden: I will be ninety in June 1979.

Larson: I think that brings us about to a close on the interview. On behalf of the Forest Service and the Forest History Society and myself, I'd like to thank you very much for participating in this and I hope this material can be utilized by historians and whoever might find a use in it. Thank you.

(Jim Evenden died in Coeur d'Alene on October 19, 1980)

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