

Malcolm M. Furniss Founders Award Address

1998 Founders Award Recipient

*Breckenridge, Colorado; September 16, 1999**



My response as the recipient of the 1998 Founders award was largely biographical with emphasis on my studies involving bark beetle - fungus associations, in keeping with the theme of this joint meeting of entomologists and pathologists. In doing so, I sought to emphasize the circumstances and people as they related to my career as a forest entomologist beginning with the precise middle of the 20th century and continuing to the present. Regretfully, for the Proceedings I must omit many anecdotes that have enlivened my travels and associations.

I was born June 17, 1926 at Branchville, NJ, the last of six children of Clinton C. and Ruth Watts Furniss. The oldest, Robert L. Furniss (1907 - 1980), was a founder of the WFIWC. My first recollections are of Waverly, Tioga Co., NY where I resided until graduating from high school in 1944. I took naturally to exploring the woodlots and rivers of that rural locality and developed an enduring love for the outdoors and related activities.

In October 1944, my mother and I moved to Berkeley, CA where she resumed employment as a registered nurse. On Jan. 20, 1945, I entered the Army Air Corps at Camp Beal as an aviation cadet and was stationed successively at Truax Field, Biloxi, Miss., Roswell Air Field, Roswell, NM (the first atomic bomb was detonated at White Sands during that time), and Truax Air Field, Madison, Wisc. However, termination of WW II prevented me from completing that training and I was discharged on Nov. 8, 1945.

The war had begun when I was 15 and, until my discharge, I had not thought about a University education or the choice of an occupation. But forestry seemed interesting so I enrolled with the aid of the "GI Bill" at University of California in the spring term of 1946.

I had never taken school seriously and had several deficiencies; however, I was admitted as a Special Student. My lack of studying ability resulted in receiving an "F" from Dr. Pappenfus in Botany 12, a 4-unit course. As it turned out, that was the best medicine I could have had. I discovered that I did not like failure. I also realized another trait: I hate doing the same task twice. So, that fall, I enrolled in a 5-unit Botany course (different teacher and content). I received an "A" and I was off to the races. I thoroughly enjoyed those 4 years at Cal. I graduated in January 1950.

Employment: 1950 - 1954

By now I was married to Irene M. Drummond and we had two children (Richard and Carolyn). We were still living in Richmond in 4-apartment housing constructed during the war for Kaiser shipyard workers. I continued for a time working as a chemist's assistant at the California Ink Co. in west Berkeley, formulating paint, as I had done throughout my enrollment at Cal.

On June 19, 1950, I was hired by F. Paul Keen at the Berkeley Forest Insect Lab, Bureau of Entomology & Plant Quarantine, USDA, as a temporary employee at \$240/month to survey beetle-killed trees in the Sierra Nevada Mtns. The Forest Insect Lab was located in the basement of Walter Mulford Hall on the campus. The staff included John M. Miller (retired) who had graduated from Stanford in 1907 (5 years after creation of the Division of Forest Insect Investigations (FII), USDA) and who was hired by A.D. Hopkins, first Chief of FII. Others, besides Keen, were Ralph C. Hall, George R. Struble, and Jack W. Bongberg who was in charge of surveys and development of the California Risk Rating system. (Both Boyd Wickman and I were assigned that work at different times after Jack transferred to Albuquerque). However, everyone on the staff participated in varying degree in all three functions of the laboratory: Research, Surveys and Control Supervision.

In 1953, the Bureau of Entomology and Plant Quarantine was dissolved and those of us in FII were transferred to the Forest Service (Calif. Forest & Range Experiment Station), but still in the same building.

Before long, responsibility for surveys and control supervision was transferred from the Experiment Station to the administrative Regions. I believe that had lasting adverse consequences. Plots that had existed for decades ceased to be resurveyed. Perhaps more importantly, the BE&PQ was an agency with no direct ties to resource management (a neutral entity). We enjoyed very friendly and close relationships with all agencies: Forest Service, National Park Service, Bureau Indian Affairs, Bureau Land Management, State Forestry Departments, and especially the many private forestry companies and organizations such as Weyerhaeuser, Collins Pine, Fruit Growers Supply, Western Pine Assn., etc. For example, Paul Keen and Ernie Kolbe, later head of Western Pine Assn., were roommates during their bachelor days; and Weyerhaeuser Co. honored Paul by commissioning a painting of him beside a beetle-killed tree that was published in national magazines. Anyway, after the transfer to the Forest Service,

we could no longer be as close to industry as we had been and I believe that cost us. Furthermore, with loss of our identity, the mentoring of new employees such as had benefited me earlier seemed to be disrupted. And the transfer and application of research that had occurred so routinely seemed less so, and varied with the attitudes of individuals on both sides But I stray from my task.

During the summers, my family lived among the forest in wall tents, first at Blacks Mtn. Experimental Forest, then at Hat Cr. Field Base, both in Lassen Co., northeastern Calif. We lost only a day to travel going out from Berkeley in June and returning in September. We had no phone service at Black's Mountain. Lightning storms were common in afternoons and Irene would take the kids away from the big ponderosa pine that towered over the tents.

Every two weeks, we would take our old DeSoto on a grocery run to Susanville, dodging rocks and outcrops on the so-called "Pittville Highway." Once on the return, still 20 miles from camp on a sweltering day, we had two blowouts. Fortunately, someone besides us was traveling that wayward road and took us and our melting provisions on to camp.

One of my jobs during this time was to survey bark beetle hazard on 120,000 ac of remaining old growth pine on the Lassen N.F. to prioritize areas for "sanitation-salvage" logging (removal of high risk trees). George Downing worked for me one summer.

Ogden, UT: October 1954 - May 1955

I transferred to the Intermountain Forest & Range Experiment Station (INT) at Ogden, UT in October 1954. Jim (James C.) Evenden, who had set up the Coeur d'Alene Forest Insect Lab in 1918, was my distant supervisor for a short time before Don (Donald E.) Parker took over as Division Chief at Ogden.

By then, less than a year under the Forest Service and conscious of having only a BS Forestry degree, I was getting nervous that I might be reassigned to work involving other than forest insects. However, I had acquired 12 units of entomology, sufficient to meet the Civil Service requirement for classification as an Entomologist.

So, when Evenden came to Ogden on his first visit we invited him to dinner (Irene can cook as many of you know!). Well, Jim enjoyed the meal, saying to Irene, while patting his stomach: "Those rolls really hit the spot." His mellow mood lasted into the evening and I found occasion to express my concern and wondered if it were possible to be reclassified from Forester to Entomologist. He said that he would look into it and he did and I was. It sort of reminded me of the sign on Jim Kimmey's desk in Ogden: "Yesterday, I couldn't spell Pathologist and today I are one."

Boise, ID: 1955 - 1963

Coinciding with my transfer to Ogden was a spruce budworm infestation on one million acres of five national forests in southern Idaho and plans were underway to spray it with DDT (1 lb/ gal of diesel oil). That, plus a recent outbreak of pine butterfly on the Boise N.F., led to the decision to transfer me to Boise in May 1955. I couldn't have been happier; here was a state possessing everything that I enjoy.

That summer, I was in charge of the entomological aspects of the project that is still the largest in Idaho. Project personnel were divided into two activities, mine involving daily monitoring of larval development to time spraying just prior to pupation, and spray operations involving production measured by thousands of acres sprayed. Because no spray unit could be released for spraying without my authorization, there was constant pressure from the other side. People were up before dawn seven days a week. Everybody was tired. Thus, when Jim (James A.) Beal, Chief of Forest Insect Research, Wash. DC, came through Boise en-route to visit me at my location in Idaho City, my counterpart in operations at the Boise Forest Supervisor's office gave him an ear-full. After his arrival in Idaho City and after a libation, Jim smiled and said that I must be doing my job because he had gotten complaints on his stop in Boise. That was a great boost for my morale!

In the following year, I was assigned to study the Douglas-fir beetle, which at the time was rated as the #1 bark beetle problem in the northern Rocky Mtns. When roads opened that spring, I looked for a suitable study area. I remember my elation as I crossed Lick Cr. summit east of McCall, then down into the Salmon River drainage. This place had a mystical attraction. By chance, I located a group of infested trees on an alluvial bench near Camp Creek on the Krassel Ranger District. The trees were on a parcel of land homesteaded by Bill Darling in the 1920's. We subsequently became good friends. His education had ended in grade school but his intellect and memory of events and details was seldom equaled among others whom I have come to know. Those trees provided my first data on a study of sampling methods involving distribution and density of galleries and broods in standing and downed trees.



By further chance, a building (photo at right), dating to the CCC days (pre-WWII) was still at Camp Cr. We refurbished it and it served as our summer residence from 1956 to 1962. We cooked on a wood stove which also heated water for a shower and a wringer washing-machine powered by a Briggs-Stratton gasoline motor. We had a kerosene-

powered Servel refrigerator. The outhouse was a 3-holer dating to the logging days. We brought some Banty chickens hoping to have fresh eggs but coyotes got them all. Every July 15, I caught a salmon on opening day of the season and we cooked it outdoors over alder wood for a traditional dinner. One fall I harvested my first elk up in Four-mile Creek and of necessity learned how to use a basket hitch to pack it out on a borrowed horse. A Forest Service mule tagged - along which upset the District ranger. Fortunately, he was de-fused by Bill Darling's explanation: "Dick, you've got it all wrong", freeing me of intention. Finally, however, after the 1962 season our children, now teenagers, declared that they wanted to spend summers in town playing baseball and doing other things. So, after 11 years camped out summers among the forest, the cohesion of my family and my research ended.

Moscow, ID: 1963 - 1982

In May 1963, at age 37, I transferred to the new Forestry Sciences Lab at Moscow and enrolled part time at U. Idaho. My MSc thesis dealt with a previously unstudied geometrid on curleaf Cercocarpus in Owyhee Co. Bill (William F.) Barr was my major professor. I graduated in May 1966.

Throughout this time and thereafter, I continued studying many aspects of the Douglas-fir beetle as well as other bark beetles and insects on wild-land shrubs important to wildlife. I discovered a pteromalid, *Karpinskiella paratomicobia*, parasitizing the DFB in Utah, the only known insect parasite of any adult *Dendroctonus* species. The identification of the first bark beetle pheromones in 1966 (*Ips* in Calif.) was followed rapidly by other such discoveries including the DFB aggregative pheromone, frontalin. I became involved with field testing frontalin in 1970 at the "suggestion" of INT Director, Joe Pechanec. We were in a DC-3 airplane viewing an outbreak of DFB on the Boise N.F. He, Assistant Dir. Chuck Wellner, and I were crowded at a side window. Over the din of the motors, Pechanec looked straight at me and asked: "Shouldn't we be studying pheromones?"....Not waiting for my answer, he said, "Can we afford not to?"

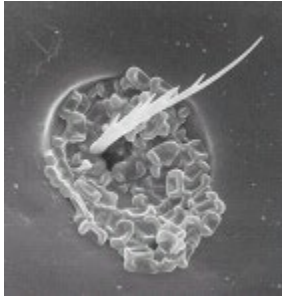
Thus, I embarked on field tests that same year and determined that alpha-pinene in tree resin synergized the attraction of frontalin. In 1971, I discovered that another DFB pheromone, (MCH), identified by Julius Rudinsky (OSU), was an anti-attractant, functioning to turn off attraction after a male has located a female. During the next 10 years, I was helped by many persons (shown in resulting publications, including Mark McGregor and Ladd Livingston) in developing MCH for aerial application to *temporarily* susceptible trees (e.g., windthrown, snow-broken) to *prevent* release of a DFB population that subsequently kills live trees.

During these years, I also traveled several times to Mexico doing fieldwork, often accompanied by David Cibrian-Tovar of the University of Chapingo (and once by Frank Hawksworth, the mistletoe taxonomist). Notable accomplishments included discovery of the DFB in that country in 1974 (which I described as the subspecies *D. pseudotsugae barragani*) and studies of *Dendroctonus rhizophagus* (in cooperation with Cibrian-Tovar

and Rudolfo Campos-Bolaños) that resulted in removing it from synonymy with *D. valens*. I also tested various pheromones in Alaska in cooperation with Bruce Baker and Richard (Skeeter) Werner, involving the spruce beetle, *Dendroctonus rufipennis*; and *D. simplex* in larch.

Moscow, ID: 1982 - present.

In April 1982, I retired as Project Leader of a research work unit entitled: Insects of Forest Trees and Wild-land Shrubs of the Northern Rocky Mtns. That ended the continuous presence in Idaho of forest insect research by USDA forest entomologists that began with Jim (James C.) Evenden at Coeur d'Alene in 1918 when he returned from WW I as a Capt. in the Army. Upon my "retirement" I became affiliated with the Department of Entomology at U. Idaho, continuing to the present.



In the intervening years, I demonstrated in Norway (with Erik Christiansen and Halvor Solheim) the way in which the pathogenic blue stain fungus, *Ophiostoma polonicum*, is vectored to Norway spruce by *Ips typographus* and (in Idaho) *O. Ips* to ponderosa pine by *Ips pini* (with Al Harvey). In both instances, ascospores were shown by SEM to be carried in pits on the prothorax or elytra. The notion that this might be so was due to Ladd Livingston's earlier discovery of similar spores in pits on the head of *Scolytus ventralis*.

Other important studies involved *Dendroctonus punctatus* (biology and taxonomic validity in relation to *D. micans*) which had remained obscure and un-studied. I also surveyed with J.B. "Ding" Johnson and Sandy Kegley the Scolytidae that occur in the four Northwest States and prepared for publication a Field Guide to the Bark Beetles of Idaho and Adjacent Regions (University of Idaho Forest, Wildlife and Range Experiment Station Bull. 74).

Also in the last decade, I have studied two insects on Alaskan willows: a leaf miner, *Micrurapteryx salicifoliella*, infesting vast areas of the interior and the willow bark beetle, *Trypophloeus striatulus* (Mann.). These studies resulted from my conversation with Ed Holsten (Anchorage) at the Penticton WFIWC during which he invited me to investigate insects infesting willows in 1962-3 and in 1996-7.

As Chairman of the WFIWC History Committee, I have published several articles in the American Entomologist beginning with the paper on bark beetle depredations in the Black Hills Forest Reserve, ca 1897-1908, delivered at the 1995 meeting in Rapid City.

Finale

I especially wish to thank Sandy (Gast) Kegley for nominating me, for her eloquent introduction, and for her friendship. My sincere thanks also to the many, some mentioned herein, who contributed to my career in differing ways and without whose help and influence there would be no basis for my receiving this award.

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