

Norway



Erik Christiansen. "Pick up a stick and the World is attached to it." That is how Norway comes to these pages. Erik Christiansen has - through his own studies and cooperative work with American entomologists - contributed more than anyone toward an understanding of the complex mechanisms of defensive response to coniferous bark beetles and their associated fungi. In 1987, I (M. Furniss) lived for 6 weeks with Erik and Tove Christiansen in Ås, Norway, while studying the vectoring of the pathogenic blue stain fungus, *Ophiostoma polonicum* by *Ips typographus* in Norway spruce. Here, I share recollections of that experience, how it came about, and glimpses of Erik's contributions to an understanding of principles involved when primary bark beetles interact with coniferous hosts anywhere.

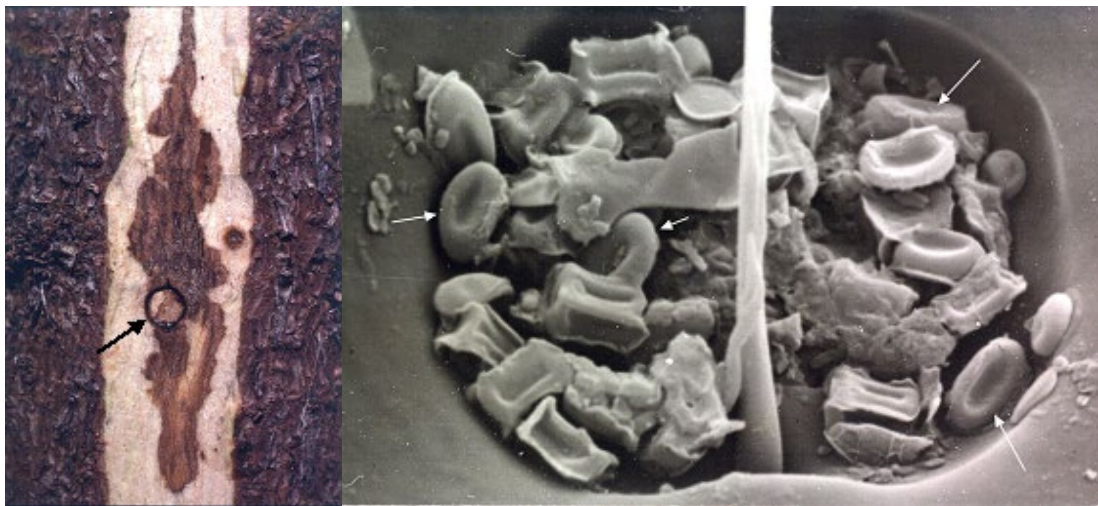
Like most of us, Erik's scientific career developed somewhat by happenstance. He grew up amidst the large, beautiful, and varied forests surrounding his suburban home in Oslo. He could put on skis outside the door and head for the woods. His family had a nice log cabin in the forest north of the city where he would go often with his high-school friends on a Saturday and ski back to Oslo the following day. After military service, he took up logging and other practical forest work and was admitted into a Forest Technician School in the old silver mining town of Kongsberg. Thereafter, he worked as a lab assistant in the Institute of Wood Technology in Oslo, before starting studies at the Agricultural University of Norway (NLH) in Ås.

At NLH, his major subject was silviculture involving forest site conditions in relation to geology. Upon graduation in 1966, his professor of forest entomology, Alf Bakke, asked if he would consider a job as substitute scientific assistant for a period of three years in the Norwegian Research Institute, where he was a senior scientist. Alf's important contribution to the identification of the population aggregation pheromone of the bark beetle, *Ips typographus*, provided an invaluable experimental tool for experimental work with which Erik was involved later. Forest entomology was a favourite subject and it occurred to him that this might be an interesting occupation while looking for a job in practical forestry, and that a scientific degree (Dr. Sci.) could be useful, regardless of future plans.



I remember Erik visiting me one fall, accompanied by Alan Berryman of Washington State University. Erik had sought out Alan who had similar entomological interests. I had just returned from a lengthy elk hunt and shared my story of quietly stalking a bedded bull in my wool socks. Then, barely finding where I had shed my shoes before darkness set in. We hit it off well and went for a climb on Mt Hood in August 1986. We got as far as the gaping bergschrund (crevasse) about 600 ft below the summit. Ill-advisedly, we sought a route around it up a very steep slope where we lost our nerve and managed to extract ourselves. After dinner and a few beers in my truck camper that evening, I discussed how I thought that *O. polonicum* might be carried to Norway spruce in punctures on the exoskeleton of *Ips typographus* and how that might be

demonstrated. This resulted in my being invited to Ås during May-June of 1987. A highlight of my life. I was treated as family by the Christiansen's and I enjoyed their customs not to mention Tove's cooking, which included reindeer, "Laks" (salmon), and a birthday cake; always acknowledged by an appreciative "Takk for maten." Nearing the end of my stay, we ushered in Midsummer on a island in Oslo fjord from where traditional bonfires could be seen lighting the mainland shore for miles.



Here, it is necessary to catch up with Erik's work up to that time. In the years 1968-1980, his work and publications involved a weevil, *Hylobius abietis*, and various rodents important to forestry. From 1983 onward, his publications dealt increasingly with *O. polonicum* and its effects on inoculated Norway spruce (see [References](#)). I used his inoculation technique to demonstrate that various alcohol-cleansed body parts of *I. typographus* elicited the same lesions caused by cultures of *O. polonicum*. I also showed by SEM photography that spores of *O. polonicum* were present in punctures on the pronotum and elytra of alcohol-cleansed *I. typographus* (Furniss et al. 1990). These spores are adapted to cling together and to the cuticle until the solvent action of live

phloem and the flexing and rubbing of the integument during gallery construction free them to germinate and enter the host tree tissue.

In the years since my involvement, Erik and his cooperators have delved ever more deeply into the subject of defensive response. An impressive array of their findings is evident from his bibliography and most recently the CONDEF (coniferous defense) Project (www.skogforsk.no/CONDEF/). He also has provided a narrative describing his youth, circumstances by which he became involved with research on defensive response, and a time-line of work and accomplishments by him and cooperators to the present, which I have designated for the archives. -- *Malcolm M. Furniss*

References:

Furniss, M. M., H. Solheim, and E. Christiansen. 1990. Transmission of blue stain fungi by Ips typographus (Coleoptera: Scolytidae) in Norway spruce. Ann. Entomol. Soc. Am. 83:712-716.

Christiansen, E. Bibliography: <http://www.skogoglandskap.no/arkiv/publikasjoner> Type "Erik Christiansen" under "Forfatter" and choose the upper "Kategori" (Velg Kategori).

CONDEF <http://www.skogforsk.no/CONDEF/>