How to Become a Forest Ecologist In Only 40 Years

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When I was 12 years old, my mother took me to the public library where I had to check out at least one book every week. John T. Curtis’ great classic *The Vegetation of Wisconsin, an Ordination of Plant Communities* (1959) was on the shelf. Despite my lack of appreciation for the words “plant community” and “ordination.” I checked out the book. According to the index it mentioned Wisconsin’s Door Peninsula, where our family summer house was located, and I might learn about the surrounding forests. Surprisingly, I was engrossed in the book, read it cover to cover, memorized the plant species in every native plant community, and within a few weeks decided to carry on the type of work Curtis had started, and set the personal goal of obtaining a Ph.D. in Forest Ecology at Curtis’ university, The University of Wisconsin-Madison.

While a senior undergraduate student in Botany and Bacteriology at UW-Madison, I noticed Craig Lorimer’s newly published paper on reconstructing disturbance history of forest stands from tree-ring analysis (Lorimer 1980). Out of the blue one day I stopped by his office and suggested a Ph.D. project to examine disturbance history of many stands across a large landscape in Upper Michigan’s Porcupine Mountains Wilderness State Park, with its 35,000 acres of old-growth hemlock and sugar maple forests. We agreed that this was a worthy project, and after five summers of field work, we produced several papers with new methods for analyzing disturbance history and applied these methods to obtain recurrence intervals for treefall (mostly wind) disturbances across a gradient of severities (Frelich and Lorimer 1989, 1991).

The next step in my career resulted from attending the 1987 ESA Annual Meeting in Columbus, Ohio, where I met with prominent paleoecologist Margaret B. Davis (who was ESA President that year). Margaret had illuminated the development of forest communities during the Holocene by using fossil pollen analyses across eastern North America to show that each tree species migrated independently in response to climate change, and that the tree community in any one place was a temporary phenomenon, perhaps the best demonstration of the individualistic nature of plant communities (Davis 1981). I moved to the University of Minnesota for a post doc with Margaret to examine in detail how the unlogged hemlock and maple forests where I had done my Ph.D. field work formed and maintained alternate communities on very similar sites due to neighborhood effects (Frelich et al. 1993). A highlight was dating fossil black spruce needles from the bottom of Lee’s hollow at ~9700 years before present; boreal spruce gave way to jack pine, then oak and white pine, and finally a patchy mosaic of hemlock and maple as the climate warmed and then slightly cooled over the ensuing 9000 years.

Living in Minnesota, I finally was able to visit the primeval rock-bound forests of northern Minnesota, after many years of studying the classic work of Heinselman (1973, 1981), which showed how fires and succession (or oftentimes a lack of succession) created a landscape mosaic in the boreal forests of Minnesota’s Boundary Waters Canoe Area Wilderness. I was able to spend a few days canoeing with Heinselman before he died in 1993, enough to get the necessary ideas to build on his published work and launch a major, 20-year effort to understand fire and wind disturbance in collaboration with Peter Reich (e.g., Reich et al. 2001).
Fig. 1. Lee Freligh with 400-year-old windfallen hemlock, Porcupine Mountains Wilderness State Park, Michigan. Photo by Paul Jost.
Fig. 2. Lee Frelich and students examine prescribed burn effects on an oak savanna at The University of Minnesota’s Cedar Creek Ecosystem Science Reserve. Photo by Kalev Jogiste.
Combining what I learned from the classic works of John Curtis, Craig Lorimer, Margaret Davis, Bud Heinselman, and Peter Reich over four decades has well prepared me to enter a stage of my career focused on synthetic works. Examples include forest landscape dynamics as a function of interactions between disturbance severity and neutral or positive species interactions (Frelich 2002), and multi-factor interactions among wind, fire, deer grazing, and invasive species that modulate forest response to rapid climate change (e.g., Frelich and Reich 2010, Frelich et al. 2012).

Without getting started on this particular paper trail as a child at a public library, I likely would have become an architect, musician, or medical doctor, with unknown consequences.

Literature cited


