

Using Large Forest Plots and Codispersion Analysis to Identify Foundation Tree Species Before They Disappear

Speaker: Aaron M. Ellison, Harvard University

Chair: Dan Friess, NUS

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Abstract

Foundation species create and define particular ecosystems; control in large measure the distribution and abundance of associated flora and fauna; and modulate core ecosystem processes. In forests, foundation species are large, long-lived, late-successional trees whose ecological characteristics and functions rarely co-occur in other species. Successful conservation and management of the world's forests depend on identifying forest foundation species while they still have viable populations. To date, however forest foundation species have been identified only after they have begun to decline and are threatened with at least functional extinction. In this talk, I illustrate how comparisons among assemblages of tree species in a global network of large forest-dynamics plots and application of new statistical and analytical methods are suggesting new ways of identifying forest foundation species before it is too late to save them.

About the Speaker

Aaron M. Ellison is a Senior Ecologist at the Harvard Forest, the Senior Research Fellow in Ecology at Harvard University in the Department of Organismic and Evolutionary Biology, an Adjunct Research Professor in the Tropical Forests & People Research Centre at the University of the Sunshine Coast (Australia), an Adjunct Research Professor in the department of Biology at the University of Massachusetts at Amherst, and a semi-professional photographer and writer. He received his B.A. in East Asian Philosophy from Yale University in 1982 and his Ph.D. in Evolutionary Ecology from Brown University in 1986. After post-doctoral positions at Cornell and with the Organization for Tropical Studies in Costa Rica, Aaron taught for a year at Swarthmore College before moving to Mount Holyoke College in 1990. There, he was the Marjorie Fisher Assistant, Associate, and Full Professor, founding director of Mount Holyoke's Center for Environmental Literacy, and Associate Dean for Science, and he taught biology, environmental studies, and statistics until 2001. In 1992, Aaron received the National Science Foundation's Presidential Faculty Fellow award for "demonstrated excellence and continued promise both in scientific and engineering research and in teaching future generations of students to extend and apply human knowledge." Following a sabbatical year at Harvard in 2001-2002, Aaron assumed his current position at the Harvard Forest—Harvard's 1500-hectare outdoor classroom and laboratory for ecological research.

Aaron works in wetlands and forests to study the disintegration and reassembly of ecosystems following natural and anthropogenic disturbances, and also does research on the evolutionary ecology of carnivorous plants, the response of plants and ants to global climate change, the application of Bayesian statistical inference to ecological research and environmental decision-making, and the critical reaction of Ecology to Modernism. He has authored or co-authored over 200 scientific papers, dozens of book reviews and software reviews, and the books *A Primer of Ecological Statistics* (2004; 2nd edition 2012), *A Field Guide to the Ants of New England* (2012; recipient of the 2013 USA Book News International Book Award in General Science, and the 2013 award for Specialty Title in Science and Nature from The New England Society in New York City), *Stepping in the Same River Twice: Replication in Biological Research* (2017), *Carnivorous Plants: Physiology, Ecology, and Evolution* (2018), and *Vanishing Point* (2017), a collection of photographs and poetry from the Pacific Northwest. From 2010-2015, Aaron was the Editor-in-Chief of *Ecological Monographs*, in 2012 he was elected a Fellow of the Ecological Society of America, and he is currently a Senior Editor of *Methods in Ecology & Evolution*.

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