

Kranabetter, J.M., Durall, D.M., and MacKenzie, W.H. 2009. *Diversity and species distribution of ectomycorrhizal fungi along productivity gradients of a southern boreal forest*. *Mycorrhiza* 19: 99-111.

Abstract

Coniferous forests with diverse ectomycorrhizal fungus (EMF) communities are associated with nutrient-poor, acidic soils but there is some debate whether EMF can be equally adapted to more productive, nitrogen-rich sites. We compared EMF species distribution and diversity along a replicated productivity gradient in a southern boreal forest of British Columbia (Canada). Roots from subalpine fir (*Abies lasiocarpa*) saplings of the understory were sampled and EMF species were identified by morphotypes supplemented with ITS rDNA analysis. There were significant changes in the distribution and abundance of 74 EMF species along the productivity gradient, with as little as 24% community similarity among contrasting sites. Species richness per plot increased asymptotically with foliar nitrogen concentrations of subalpine fir, demonstrating that many EMF species were well suited to soils with high rates of nitrogen mineralization. EMF species abundance in relation to site productivity included parabolic, negative linear and positive exponential curves. Both multi-site and more narrowly-distributed EMF were documented, and a diverse mix of mantle exploration types was present across the entire productivity gradient. The results demonstrate strong associations of EMF fungal species with edaphic characteristics, especially nitrogen availability, and a specialization in EMF communities that may contribute to the successful exploitation of such contrasting extremes in soil fertility by a single tree host.