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Investigating biotic and abiotic factors structuring ectomycorrhizal communities
in a lowland tropical rain forest

The ecological mechanisms structuring ectomycorrhizal (ECM) symbioses in lowland tropical rain forests are not clearly understood, particularly within the Dipterocarpaceae of Southeast Asia, which form obligate relationships with ECM fungi. This study examined the extent to which edaphic factors and host-specificity structured ECM fungi across a soil ecotone in Bornean rain forest. Using Illumina high-throughput sequencing of bulk soil samples and Sanger sequencing of ectomycorrhizal root tips collected from three species of *Shorea* (Dipterocarpaceae), we tested the following hypotheses: 1) variation in ECM fungal community structure reflects soil nutrient partitioning by soil type and soil horizon, and 2) ECM fungal community structure varies within soil type between host species of *Shorea* (Dipterocarpaceae). Extraction of DNA from the colonized roots and Sanger sequencing of the internal transcribed spacer (ITS) region of the fungal genome led to identification of fungi present in the root systems. We also sequenced the ITS region for above-ground ECM sporocarps in order to make species-specific taxonomic assignments for a subset of the colonized root tips. We found significant differences between ECM community structure across different soil types and horizons, but no evidence of host-species specificity of ECM fungi. These results suggest that different fungal taxa are structured by abiotic soil factors, and that there is minimal biotic influence on ECM community structure.