

Limited contributions of plant pathogens to density-dependent seedling mortality of mast
fruiting Bornean trees

ABSTRACT

Fungal pathogens are implicated in driving tropical plant diversity by facilitating strong, negative density-dependent mortality of conspecific seedlings (C-NDD). Assessment of the role of fungal pathogens in mediating coexistence derives from relatively few tree species and predominantly the Neotropics, limiting our understanding of their role in maintaining hyperdiversity in many tropical forests. A key question is whether fungal pathogen-mediated C-NDD seedling mortality is ubiquitous across diverse plant communities. Using a manipulative shadehouse experiment, we tested the role of fungal pathogens in mediating C-NDD seedling mortality of eight mast fruiting Bornean trees, typical of the species-rich forests of South East Asia. We demonstrate species-specific responses of seedlings to fungicide and density treatments, generating weak negative density-dependent mortality. Overall seedling mortality was low and likely insufficient to promote overall community diversity. Although conducted in the same way as previous studies, we find little evidence that fungal pathogens play a substantial role in determining patterns of seedling mortality in a SE Asian mast fruiting forest, questioning our understanding of how Janzen-Connell mechanisms structure the plant communities of this globally important forest type