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Influence of microclimate and bark pH on lichen communities along tree trunks in the tropical rain forest at KhaoYai National Park, ThailandMongkol Phaengphech^{1*}, Santi Watthana², Kansri Boonpragob¹¹Department of Biology, Faculty of Science, Ramkhamhaeng University, Bangkok, Thailand²Queen Sirikit Botanical Garden, The Botanical Garden Organization, Thailand

This study investigated lichen communities, bark pH and microclimate, including light intensity, relative humidity and temperature at the canopy, mid-trunk and tree base of a host tree *Terminalia citrine* growing in the tropical rain forest at KhaoYai National Park, Thailand. The microclimate was measured during the period 2008-2014. Quadrants of 60 x 20 cm², consisting of 12 subplots of 10 x 10 cm², were placed on the east-facing side of the trunk at 30, 15 and 2 m above the ground. A total of 43 species of lichens were identified, of which 22, 16 and 8 species were recorded from the canopy, mid-trunk and tree base respectively. The canopy, where the highest lichen taxa was found, had day-time illumination averaging 56 mmol m⁻²s⁻¹, daily relative humidity 82%, and bark pH 4.9. Sterile sp.3 and Sterile sp.2 dominated at this level. The mid-trunk had an external environment comparable with the canopy, except that light intensity was lower, averaging 22 mmol m⁻²s⁻¹. *Chapsa asteliae* had the highest frequency and area cover at this level. However, the community structure of the canopy and the mid-trunk differed. Only *Chapsa asteliae*, *Anisomeridium* sp. and *Trypethelium tropicum* were commonly found at both levels. In contrast, the lowest lichens taxa at the tree base received light intensity as low as 3 mmol m⁻²s⁻¹, RH 87% and bark pH 5.9. *Phyllopsora haemaphaea* and *Dichosporidium boschianum* dominated this level. This study underpins the importance of illumination on species diversity of lichens along the environmental gradient between the canopy and tree base in a tropical rain forest.

Keywords: Microclimate, bark pH, lichens, tropical rain forest

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