

The effects of temperature and humidity on species composition and percentage coverage of lichens

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Structured Abstract

Background: Lichens are easily affected by climate as their natural way of living is by photosynthesizing and taking in nutrients from the air. Therefore, differences in the temperature and humidity may cause a certain species of lichen to thrive better. Climate change causes the increase of the temperature of the earth which may affect the lichen distribution. Not many studies on lichens in Malaysia were conducted due to the nature of lichen being brittle and dry, making it hard to sample. Therefore, this study was conducted to relate the effects of temperature and humidity on lichens.

Methods: The species composition and percentage coverage of lichens were observed using 15cmx15cm quadrats, laid on 30 selected trees. The measurements of temperature and relative humidity were recorded using a hygro-thermometer. The study was conducted in two selected sites which are UiTM Shah Alam and Fraser's Hill. UiTM Shah Alam indicates the surrounding area with higher temperature and lower humidity as opposed to Fraser's Hill which has lower temperature and higher humidity.

Results: A total of 29 species of lichens from 14 families were recorded in the study sites. Family *Chrysothricaceae* exhibit the largest frequency (28.2%) and coverage (23.2%) in UiTM Shah Alam while Family *Parmeliaceae* exhibit the highest frequency (54.8%) in Fraser's Hill. Genus *Lepraria* exhibit portrayed the largest coverage in Fraser's Hill (20.3%). Genus *Lepraria* is present in both sites, indicating that it is not strongly affected by temperatures and relative humidity.

Conclusion: Crustose lichens are more abundant in warmer regions, while foliose and fruticose lichens are more abundant in colder regions. The findings of this study highlighted the species composition and percentage coverage of lichens that were recorded in two selected study sites, building on the data collection of lichen species present in Malaysia.

Keywords: Lichen, species composition, percentage coverage

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