SP11_001_PA: MORPHOLOGICAL RESPONSE OF LICHEN TRANSPLANTS AS A BIOINDICATOR OF AIR POLLUTION

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Abstract:

Lichens are sensitive to air pollution and can be used as bioindicators of air quality. They reflect the effects of air pollution by physiological alteration, morphological abnormality, and community change. The objective of this study was to test whether the morphological response of the lichen *Parmotrema tinctorum* can be used as a preliminary indicator of air pollution. Every 5 thalli of the lichen were transplanted at three different sites: one site in Khao Yai National Park (unpolluted/control site), one site at about 8 km from the main area of Laem Chabang industrial estate (moderate pollution), and one site within the main industrial area (high pollution). The lichen thalli were exposed for 1 year between December 2018 and November 2019, and they were photographed in every 3 months. Most thalli at the closest site to the industrial area partly showed bleaching and necrosis on their surface within 3 months after transplantation. The symptoms appeared on the entire surfaces at about 9 months after transplantation. While the lichens at the outer location of the industry showed bleaching only at the end of the transplantation, and those at the control site were normal throughout the transplantation period. The lichens at the highly polluted site were affected the most in the dry cool season (December to February) followed by the hot season (March to May), whereas those in the rainy season (June to November) were slightly affected. This result has consisted of air pollution data measured by air quality monitoring station reporting that worst air quality occurred during the dry cool season. This study can confirm that the morphological response of the lichen can be used as a preliminary signal to warn the air pollution situation.