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Phenetic diversity and distribution of mosses in selected sites and heavy metal accumulation of three selected moss species

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The present study revealed the species richness and diversity status of mosses in five selected sites (Premises of University of Kelaniya, Pillikuttuwa forest reserve, Sapugaskanda oil refinery, Kelanithissa thermal power plant and Biyagama industrial zone) in the Gampaha District. The findings of the study revealed that *Hyophila involuta* and *Barbula* sp. 1 were the most abundant species at these sites. The species richness and diversity were higher in the premises of the University of Kelaniya and Pilikuttuwa forest reserve, may be because these areas are covered with dense trees providing adequate substrates, shade and a cool moist environment compared to the other study areas.

For the purpose of preparation of an identification key for mosses the morphological diversity of twenty three moss species was studied and a multi-access key and a dichotomous key were produced. The morphological characters were subjected to Principal Component Analysis. The analysis indicated that clustering of taxa were influenced primarily by position of main stem, presence of central strand, leaf shape, substrate, number of costae, presence or absence of costa, leaf cell wall, nature of leaf margin, leaf marginal cells, shape of the leaf basal cells, presence of hyaline cells at the leaf apex and height of the plant or length of branched stem.

For studies on heavy metal accumulation moss sample collecting and handling were carried out using forceps and plastic gloves to avoid contaminations. The estimation of accumulation of five heavy metals: Cr, Cu, Ni, Cd and Pb in *Hyophila involuta, Barbula* sp.1 and *Fissidens zollingeri*, which were recognized as common to the study sites in Kandy, Kelaniya and Nuwara Eliya, have been carried out using atomic absorption spectroscopy. The study revealed that *Hyophila involuta* has a high affinity for Cr, Ni and Pb, while *Barbula* sp.1 has a high affinity for Cr, Cu, Cd and Ni. Further, *Fissidens zollingeri* has high affinity for Cu and Cd. In view of this, there is a possibility of using *Hyophila involuta* for the determination of Cr, Ni and Pb, *Barbula* sp.1 for Cr, Cu, Cd and Ni and *Fissidens zollingeri* for Cu and Cd.

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