D-02 A preliminary study of elemental bioaccumulation on a *Calymperes* species in four different sites using X-ray fluorescence spectroscopy

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In a study carried out among plants sampled from Colombo, the moss *Calymperes* was observed to accumulate air-borne metallic elements very efficiently directly from the atmosphere. *Calymperes* was used in this study as an indicator of aerial metallic burdens due to soil and anthropogenic pollution in 4 different study sites namely Colombo, Nawinna, Matara and Kurunegala.

Concentrations of Fe, Ti, Pb, Br, As and S were measured by Energy Dispersive X-ray Fluorescence. Spectra were analysed using the AXIL program. Triplicate measurements of the samples were carried out.

Highest accumulation of Pb, Br, and As was measured in *Calymperes* sampled from Colombo with mean concentrations and standard deviations of 107 ± 10, 26 ± 2.5 and 57 ± 5.4 μg/g respectively while the lowest levels were measured from Kurunegala with values of 11 ± 1.5, 7 ± 0.7 and 9 μg/g. An appreciable accumulation of S was measured from Nawinna with a concentration of 7500 ± 715 μg/g. Highest levels of Fe and Ti were from the moss samples from Matara with mean concentrations of 8680 ± 823 and 600 ± 58 μg/g respectively. All results are reported on a dry plant weight basis.

The traffic density in the 4 sites correlates with the levels of Pb, Br and As. Therefore it is reasonable to associate the main source of these metals with vehicular exhaust fumes. The presence of Fe and Ti can be due to the atmospheric soil dust. The sampling site in Matara did not have any constructed pavements and the resuspension of soil dust can occur readily. S can be associated with auto exhausts and/or pure sulphates. However Colombo with a relatively higher traffic density did not record the highest measured concentration of S. It is therefore reasonable to assume that this increase could be the result of an industrial emission.

This kind of monitoring is useful as it can be carried out without the high costs necessary for a conventional monitoring programme.