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**VEGETATION STRUCTURE AND FLORISTIC COMPOSITION IN
THE IRRIGATION EXTENSION AREA OF THE LOWER
WALAWE BASIN, SRI LANKA**

A THESIS PRESENTED BY

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A survey on plant diversity was carried out to gather base line information, prior to irrigation development in the lower Walawe basin of Sri Lanka. Vegetation was investigated by plot sampling along transects. One hundred and six transects, each 50 m × 5 m, were enumerated. The plots were subjected to cluster analysis. Ten clusters in vegetation > 1 m in height (91 transects) and three clusters in vegetation < 1m height (15 transects) were recognized separately. These clusters were treated as "plant communities".

The following community types were distinguished: moderately degraded woodland, open rock outcrop vegetation, tall shrubland, dry zone woodland, dwarf shrubland, mixed vegetation, high density degraded forest, agricultural herbland, chena lands, mixed cropland, *Croton bonplandianus*/herbland, Black-eye-bean /vineland and Paddy /annual herbland. A detrended correspondence analysis (DCA) ordination was performed on the plot data. Studies on the structure and floristic composition of plant communities gave a total of 260 plant

species belonging to 209 genera and 67 families, including two endemics (*Barleria nutans* and *Diplodiscus verrucosus*) in the vegetation greater than 1m in height. In the vegetation less than 1m in height 72 plant species belonging to 58 genera and 23 families were enumerated. Further, six timber species (2%), 107 (41%) medicinal plant species, 60 (23%) food crop species and seven invasive alien species (3%) were recorded.

A total of 220 plant species, 157 genera representing 56 families were recorded during the dry season, whereas only 200 plant species, 153 genera belonging to 57 families were recorded during the wet season. The percentage cover values of species were significantly higher in the dry season compared to that in the wet season (Kruskal-Wallis test, $H = 4.66$, $d.f = 1$, $P < 0.05$; Mann-Whitney U test, $P < 0.05$).

The plant communities recognized in this study across the climatic gradient provide a preliminary scientific basis for delineating conservation areas and for monitoring the vegetational changes in them with time. The moderately degraded woodland, open rock outcrop vegetation, dry zone woodland and high density degraded forest should be prioritized for conservation.