

PART - B**SUMMARY**

The structure and floristic composition of the vegetation types in the left bank of the main canal of the lower Walawe basin irrigation extension area in Sri Lanka.

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The Udawalawe project intends to construct a left bank main canal from the Walawe river to irrigate an area approximately 15,000 ha. A survey on plant diversity was carried out to gather baseline information on the structure and composition of vegetation of the lower Walawe Basin, prior to irrigation development.

Vegetation was investigated by plot sampling along transects. Ninety one 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) were recognized and they were treated as "plant communities.

The plant community types distinguished were, moderately degraded woodland (MDW), open rock outcrop vegetation (ROC), tall shrubland (TS), dry zone woodland, dwarf shrubland, mixed vegetation, high density degraded forest (HDDF), agricultural hermland, chena lands and mixed cropland. Studies on plant communities gave a total of 260 plant species belonging to 209 genera and 67 families, including two endemics (*Barleria nutans* Nees and *Diplodiscus verrucosus* Thw.). There were 58 tree spp., 51 shrub spp., 132 herbaceous spp. and 19 climbers spp. The dominant taxa in the MDW and HDDF were *Manilkara hexandra* (IVI = 82 and 107 respectively) and Sapotaceae (IVI = 85 and 110) and in the ROC and TS were *Ficus mollis* (IVI = 139 and 77 respectively) and Moraceae (IVI = 137 and 64). The range of stem density of plant communities was 435 - 833 individuals/3000ha in HDDF and TS respectively. The

results of the diversity indicated ROC and MDW ranked first and second respectively. While agricultural herbland ranked at last.

Seven invasive alien species, as *Prosopis juliflora*, *Leucaena leucocephala*, *Lantana camara*, *Opuntia dillenii*, *Chromolaena odorata*, *Panicum maximum* and *Xanthium indicum* were recorded in the study area. *Opuntia dillenii* and *Prosopis juliflora* together were restricted in its distribution to the DL₅ agroecological zone in highly open areas resulting from shifting cultivation. Whereas high densities of *Xanthium indicum* were recorded along stream banks and tank edges in the DL₁ agroecological zone. However, *Chromolaena odorata* and *Lantana camara* are widely distributed throughout the study area.

The survey conducted on resources of Walawe basin in 1960, the land use types of the study area were low yield dry zone forests, non productive dry zone forests and shifting cultivation lands or chena lands. Of the total extend, forest cover haboured approximately 50% in year 1960, while in year 2002 58%, of the area covered by scrubland (Dilhan *et al.*, 2002). This reveals that early forested area has been disturbed through shifting cultivation.

The plant communities recognized in this study across the climatic gradient provides 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.

The abundance of invasive alien species in sampling sites was mapped and these information could useful for future monitoring. Especially, monitoring *Xanthium indicum* with hydrology and *Prosopis juliflora* with salinity changes due to construction of left bank main canal are possible applications.

Publications

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