**Identification and Classification of Wetlands to Prioritise Considering the Importance for Flood Mitigation - Western Province, Sri Lanka**

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**Abstract**

Wetlands, acting as natural sponges, play a critical role in capturing rain, surface water, and floodwaters. Their services extend to both human and wildlife. In Sri Lanka, wetlands serve as vital buffers against extreme climatic events, yet urbanisation and exploitation threaten their ecosystems. Proper management remains challenging due to data limitation. This study was focused on the Western Province of Sri Lanka to map and prepare an *Online Spatial Wetland Inventory*, to classify the wetlands based on the *Ramsar* Wetland Classification and to prioritise the wetlands considering the hydrological importance on flood mitigation for conservation. The study employed *QGIS* and *Google Earth* satellite images to map wetlands. Wetland classification was based on field observations, *Ramsar* Classification and secondary data. A *multi-criteria* approach identified crucial wetlands for flood mitigation. Three main criteria were considered: flood event frequency, surface volume (storm water flow direction), and water volume (storage capacity of wetlands). Flood event data from 1989, 1992, 2006, 2010, and 2016 were analysed. Calculation of water storage capacity was done based on ***LiDAR point cloud*** *data* using *Surface Volume Tool*, available under *3D Analyst Tool* in *ArcGIS 10.6.1* software. The results revealed distinct wetland types within the Western Province and a comprehensive map was prepared to visualise the wetland classification. Wetlands were mainly categorised as coastal, inland, and man-made wetlands. To prioritise wetlands for flood mitigation, a map was created, highlighting three classes: highly important, moderately important and less important wetlands based on hydrological importance. The *Online Spatial Wetland* *Inventory* for the Western Province of Sri Lanka is a remarkable achievement that addresses the scarcity of spatial data. By identifying and safeguarding wetlands, thus promoting sustainable development and enhance resilience in the face of climate-related challenges.

**Keywords:** classification, flood, surface volume, wetland