

**Research Article**

## **Analysis of vegetation structure of lake Chilwa floodplain, Zomba, Malawi**

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### **ABSTRACT**

The research aimed to explore plant species composition and distribution along the floodplain of lake Chilwa, which experiences heavy cyclic flooding and drying events—thereby understanding its impact on species composition and distribution, as well as the ecosystem's resilience. Six belt line transects (150 m × 6 m each) with 18 plots (30 m × 6 m each) were used for systematic sampling to identify plant species and estimate their abundance. Indicator species and classical clustering analyses identified plant communities within distinct hydroperiod zones. Shannon's diversity (H) and Simpson's diversity (1-D) indices measured the diversity of each community. The study found 129 species, predominantly herbs (50.4%), grass (31%), and sedge (12.4%), with Poaceae being the most diverse family. Three plant communities were identified, with community found in permanent waterlogged zone showing higher Shannon's diversity (H) and Simpson's diversity indices and its soil had balanced nutrients content. Compared to similar geographical floodplains, unique species composition was observed, notably the low abundance of *Cyperus papyrus* and *phragmites australis* species. These findings suggest that the cyclic flooding and drying of lake Chilwa change vegetation composition, leading to unique species assemblages and heterogeneous habitats, potentially enhancing long-term resilience and biodiversity of the ecosystem.

**Key words:** hydroperiod zone; plant communities; permanent waterlogged; seasonal inundation; water level fluctuation; seasonal waterlogged.

