

Biodiversity and Abundance of Angiosperms Responding to Resilience Environments in the tidal range of Yuanjiang Dry-Hot Valley

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Abstract

Yuanjiang dry-hot valley is poorly vegetated as a fragile arid ecosystem. Although it was lushly forested in the past, it becomes a tropical montane savannah in recent decades. This study focuses on the relationship between plants and their living environments in the low land of this dry-hot valley. Plant species and their individuals are investigated in transects and plots arranging along the river channel. Alpha and beta indices are employed to cope with biodiversity change in species and environments. Estimated species, rarity and abundance indices are subscribed to the correlation among species, population size, and their living circumstances in terms of Species_estimated, Singletons, Uniques, ACE, ICE, and Chao2. Meanwhile, fifty years' meteorological records including temperature and precipitation are collected for environmental references. The results indicate that: (1) in Yuanjiang dry-hot valley, alpha diversity is higher in the transects and plots closing to river channel than apart from while beta diversity increases from upper stream to the lower with Bray-Curtis < 0.500 , but this condition is reversed in the transect perpendicular to the river; (2) tidal range contributes a lot in alpha biodiversity especially in the upper stream; (3) estimated species, rarity and abundance indices are significant in the sites closing to the river, which is strongly indicating heterogeneous habitats. (4) *Solanum virginianum* Ortega are screened as an indicator representing xeric environment in Yuanjiang dry-hot valley. Conclusively, plants are not flourished at the low altitude ascribed to high temperature and low water supply. More attention and ecology policy should be thrived exclusively to the microhabitat protection and environment management in this valley.

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