Vegetation Community Structure, Composition and Distribution Pattern in the Zaraninge Forest, Bagamoyo District, Tanzania

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Abstract
Zaraninge Forest, part of the Coastal Forest Biodiversity Hotspot of Tanzania, is threatened by human activities. The effect of such activities on the ecology of the forest is less known. Nested quadrat sampling technique was used along preestablished transect lines. Trees had a stem density of 521 ha-1, the majority falling in Diameter at Breast Height (DBH) size classes 9.5 to 44.9 cm. There was no significant difference in species diversity between sampling areas, which had a Shannon's diversity index ranging from 1.64 to 2.63. PCA identified two vegetation sample groups with Baphia kirkii, Cynometra webberi, C. brachyrachis, Scorodophloeus fischeri and Tessmannia burttii being abundant in both groups. TWINSPAN revealed three vegetation communities: Community A was fragmented woodlands characterized by the effects of fire and exploitation and having few remaining individuals of the valuable timber trees Afzelia quanzensis and Pterocarpus angolensis; community B was growing in a moist ecologically rich habitat and included rare species (Inhambanella henriquesii), endemic species (T. burttii, C. brachyrachis and S. fischeri); and community C had dry habitats dominated by C. webberi and C. brachyrachis. We conclude that habitat characteristics, fire, past and the present exploitation clearly influence the species diversity, distribution and variation in vegetation communities. The results are discussed in context of current and future management plans for this ecologically important forest.

Keywords
Coastal Forest of Tanzania, community structure, diversity, forest management