TREE DIVERSITY, USE AND LAND COVER CHANGES IN Mt. OTZI FOREST RESERVE, NORTHERN UGANDA

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Abstract

This study was aimed at understanding the effect of the use of the forest to tree diversity and land cover in Mt. Otzi Forest Reserve and the surrounding areas in Metu Sub-county. Data on vegetation were collected using rectangular 50X100m plots from a systematic sampling technique. Forest use data was collected through questionnaire administration, interviews of the local household heads and Focus Group Discussions. The data on land cover changes were collected through the analysis of multi-temporal satellite imagery and field observations. Shannon-wiener diversity index and values of species richness were used to assess the tree diversity. The two arms of the forest reserve (west with 30 sample plots and east with 66 sample plots) were compared. The changes in land cover were analysed by assessing change in land cover between 1986 and 2004 ArcGIS software in Metu Sub-county. A total of 11,120 individual trees representing 125 species in 92 genera and 43 families were enumerated. The western arm had a higher diversity index range of H'= 2.07 to 3.10, while the east had a range of H'=1.19 to 2.6. There was a significant difference in the species richness (P>0.05) between the two arms of the forest reserve. In both arms the Combretaceae family (FIV=30.39 in the west and FIV=40.7 in the east) was the most important family. Other important families in both arms included Annonaceae, Anacardiaceae, Mimosaceae and Euphorbiaceae. *Anacardium occidentale* L. (IV=15.59) and *Combretum binderanum* Kotshy (20.0) were the most important species in the western and eastern arms respectively. The most important families had the highest number of species and a high abundance of the species with the forest reserve. The local people utilised the forest as a store of forest products from which they obtained products to satisfy their subsistence needs. The most important value of the forest was rainfall formation. Wood and non-wood forest products were mainly collected as often as possible. The Landsat image analysis indicated a decrease in woodland by 22.5% and a 33.4% increase in farmland between 1986 and 2004. The changes in land cover were attributed to agricultural expansion. The study findings led to a deduction that the tree species diversity of Mt. Otzi Forest Reserve was varied and people's dependence of the forest contributed to land cover change. In order to conserve the forest reserve and maintain its species integrity, the status of the unique species in the forest reserve should be

examined, disturbances to the forest controlled and appropriate livelihood alternatives introduced to the local community members to reduce reliance on the forest.