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Impact of Invasive Species *Datura arborea* on Plant Species Richness In the West Usambara Mountains

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Impact of Invasive Species *Datura arborea* on Plant Species Richness

In the West Usambara Mountains

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SIT Tanzania: Wildlife Conservation and Political Ecology

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Abstract

Invasive species have the potential to alter the evolutionary trajectory of ecosystems and native species; however, our understanding of the community level effects of invasive plants remains poor. The Eastern Arc Mountain Chain is listed as one of the top 25 biodiversity “hotspots” of the world, yet also as one of the 17 most threatened tropical forest ecosystems worldwide. The primary threat to biodiversity in the EAM is accredited to human encroachment; however, the impact of invasive species in the EAM, and across Tanzania, remains poorly understood. National biodiversity and resource management policy do not directly address invasive species, and many institutions lack clearly defined long term strategies to address the issue. This study investigated the impact of an invasive species, *Datura arborea*, on plant species richness in the West Usambara Mountains in the Eastern Arc Mountain Chain. The species richness’ of plots of varying levels of *D. arborea* invasion were compared. A tight negative correlation was found between species richness and the extent of invasion (Fig 2. $y = -15.563x + 76$, $R^2 = 0.8599$). Tukey’s range test, in conjunction with ANOVA, showed mean species richness was reduced by 51.15% from uninvaded plots to highly-invaded plots; by 27.72% from uninvaded plots to low-invasion plots; and by 32.38% from low-invasion plots to highly-invaded plots ($p=0.0310$ Table 1, $q_{1,2,3}>26.98$ Table 2). Suppression of native species may be accredited to the quick growth strategy, as well as the ability to form homogenous stands, of *D. arborea*. In consideration of the exceptionally high endemism, biodiversity, and fragility of the West Usambara Mountains, this study calls for the monitoring of *D. arborea*, as well as decisive action on how national policy will directly address the issue of invasive species as a threat to the biodiversity of the biota in Tanzania.

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