

Soil, Vegetation and Land Use Heterogeneity in the Okavango Delta, northwestern Botswana

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The Okavango region, located in northwestern Botswana in the center of the vast tropical African savanna, is of great socio-economic and environmental importance. Located in the Kavango-Zambezi Trans-Boundary Conservation Area (KAZA), one of the largest transfrontier parks in Africa, it also features the Okavango Delta, a wetland of international importance and a RAMSAR protected area since 1997. Northern Botswana's protected areas, Chobe National Park and Moremi Game Reserve, currently host the largest population of African elephants on the continent. The area supports many communities by providing a diversity of livelihood activities including pastoral grazing, controlled hunting and wildlife conservation for both biodiversity and tourism purposes. The commercialization of the arable and livestock industries in the early 1970's, whereby ranches were demarcated and land was fenced, resulted in environmental threats though the intensification and restriction of both livestock and wildlife in small areas.

This summer, I conducted a pilot study for my doctoral research in northwestern Botswana. I collected soil samples and vegetation profiles in protected areas and on pastoral grazing lands. My research focuses on understanding the mosaic of natural resources that occurs as a result of interactions between soil, vegetation and land use types in dryland systems. I am interested in examining the availability and distribution of vital resources in my study area. Nutrients and water are essential to wildlife as well as livestock, which are directly linked to economic returns and local livelihoods worldwide, and especially in southern Africa. The vegetation in northern Botswana is being modified by



fire, extensive herding and anthropogenic activity such as clearing woodland for agriculture, fuel wood collection and construction materials in pastoral areas. Meanwhile, wildlife movement restrictions in protected areas have resulted in home-range reductions for migratory species such as the African elephant, which is also a source of concern with respect to habitat modification. African savannas have been experiencing rapid changes in response to climate and/or land use over the past century, and are vulnerable to future change. These changes may have profound effects on the ability of local people to use natural resources including growing crops, herding cattle, and exploiting wildlife.

I will use recently developed geophysical mapping techniques to produce high quality, high resolution geographic information on current soil, vegetation and land-use interactions. I want my research to provide landholders

with a better understanding of the local patterns of natural resources, in the hope that it will contribute to conservation strategies that are better adapted to local livelihoods in the region.

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