Elephant Community Ecology in Botswana

TIMOTHY FULLMAN

My research looks at the impact of African elephants (*Loxodonta africana*) on other large herbivores in Botswana. Southern Africa is home to the world's largest population of African elephants. While this natural treasure serves as the basis for a booming tourism industry, generating jobs and revenue for local communities, the 200,000+ population of elephants are also a source of human-wildlife conflict and preliminary research suggests elephants are affecting other large mammals, threatening the area's ecological integrity. There is a dire need to understand the impact of increasing densities of elephants on species diversity. My project investigates the applicability of the Intermediate Disturbance Hypothesis to elephants and other large mammals by quantifying patterns of species diversity across a range of elephant densities and analyzing species interactions to investigate biotic mechanisms underlying diversity trends. A better understanding of the influence of elephants on other species will enable more effective management decisions in an

area where biodiversity conservation is essential for economic growth and local livelihoods.

I first visited Botswana in 2008 while conducting my master's research on elephant utilization of trees in Chobe National Park. This summer, I returned to Botswana for two months to begin my dissertation research. This built upon work I started in 2008 to consider habitat use by large herbivores. This field season I worked

in both Chobe National Park and Moremi Game Reserve testing and refining methods for analyzing species interactions and habitat use under varying densities of elephants. Large herbivore groups were spatially located during two types of game drives. Long drives were conducted over large spatial extents to provide analysis of habitat use at a large spatial scale but at a short temporal scale at any single location. Short drives were conducted over a smaller spatial extent that was driven repeatedly every hour to provide a picture of how habitat occupancy changes over time, allowing me to consider a longer time scale but a small spatial scale.

The information collected will be combined with GIS and remote sensing land cover data from other graduate students in our research group to create predictive habitat maps for large mammals in the dry season. Pairing this with our group's climate modeling will show how predicted changes in the environment around Chobe National Park may influence the wildlife species that live there, informing management decisions by the Department of Wildlife and National Parks.

Timothy Fullman is a doctoral student in the Department of Geography. *He has received support for his research from Cleveland Metroparks Zoo Conservation Fund, QSE3 IGERT Travel Grant, NASA Climate Change Research Grant, UF College of Liberal Arts and Sciences (CLAS) Travel Grant, and a Department of Geography Travel Grant.*