Elephant Community Ecology in Southern Africa

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My research looks at how African elephants (Loxodonta africana) are affecting other large herbivores in southern Africa.

As human populations grow, the world's largest population of African elephants is increasingly being confined to protected areas. High densities of elephants within these parks raises concerns of widespread habitat change, affecting other large mammals and threatening the area's ecological integrity. There is a dire need to understand the impact of increasing densities of elephants on species diversity in order to inform effective management strategies.

My dissertation addresses this issue 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 how elephants are influencing other species will enable managers to protect wildlife and habitats while also allowing conservation to contribute to economic growth and local livelihoods through initiatives like ecotourism.

On previous trips to Botswana in 2008 and 2010, I investigated elephant utilization of trees in Chobe National Park and collected preliminary data on habitat use and interactions of elephants and other large herbivores. Funded in part by the Center for African Studies, I was able to expand my work in 2011, collecting additional data in Chobe National Park, as well as conducting pilot studies in Bwabwata and Mudumu National Parks in the Caprivi Strip of Namibia. These parks offer areas of medium and low elephant densities to complement the moderate and high densities found in

Moremi and Chobe. Working across multiple parks allows me to test for the effects of elephants across a range of densities, helping improve understanding of what concentrations of elephants might promote species diversity, and what constitutes "too many" elephants.

Using a series of game drives, wildlife groups were spatially located using a GPS unit, compass, and laser rangefinder. The data are now being analyzed using spatial statistics to evaluate whether animals are more clumped or dispersed across the landscape than expected by random chance, indicating underlying behavioral interactions. The information collected is also being combined with remotely sensed land cover data to create predictive habitat maps for large mammals in the dry season. Pairing this with our group's climate modeling will show how elephant impacts and predicted changes in the environment around Chobe National Park may influence the wildlife species that live there, informing management decisions by the wildlife departments of Botswana and Namibia.

Southern Africa is home to an impressive display of wild creatures and it is a joy and a privilege to be able to work in this area. There is nothing quite like watching a family of elephants drinking at the river's edge, silhouetted by the setting sun, or seeing a leopard sliding through the bushes on its way to hunt. Experiences like these reinforce my passion to protect the wild places and animals of southern Africa so that future generations can continue to enjoy them. I appreciate the support that the Center for Africa Studies and many other organizations have shown, enabling me to continue my work of learning about and protecting the wildlife of Africa.

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