Spatial Dynamics of Elephant Impact on Trees in Chobe National Park, Botswana

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This summer I spent about three months in Botswana conducting research inside Chobe National Park in the northeast corner of the county. The project consisted of two main components, one looking at vegetation status and the other wildlife distribution. The bulk of the project focused on spatial dynamics of elephant impact on trees. Elephants are known to exert a great influence on trees, breaking branches while foraging and sometimes stripping bark off the trees in a process known as "ringbarking." Some trees are completely knocked over. I looked at patterns of elephant use correlated with distance from the Chobe River, the permanent water source in the area. Previous studies have demonstrated high levels of elephant use around the river, tapering off as one heads further inland. These studies all stop, however, about 9km into the park. I wanted to go much farther than this to see if elephants were drinking and foraging around the river and then moving inland to feed. This might result in two peaks in tree damage, with important ramifications for ecosystem stability.

Working with two other UF students, as well as individuals from the Botswana Department of Wildlife and National Parks and the University of Botswana, I completed vegetation transects stretching from the Chobe River to the southern border of the park. Thirty-four transects were systematically conducted every 2.5km along a dirt road that runs roughly north-south through the park. Trees within a certain area were identified to species and spatially located using a GPS unit. We then assessed their current health and damage from elephants and fire. I am currently analyzing this data in preparation for presentations and publication Spring 2009.

The other part of the project looked at how wildlife use the landscape around the Chobe River. It was primarily preliminary work to test out methods that may be used in future studies. Roads along the riverfront were driven following routes used in previous ecological studies. Large mammals were identified, counted, and spatially located using a GPS unit, a laser rangefinder, and a compass. This information, when combined with remote sensing data being utilized by other graduate students in our research group, will be used to create a predictive habitat map for dry season riverfront use by mammals. This information will be paired with our group's remote sensing work to show how predicted changes in the environment around Chobe National Park may influence the wildlife species that live there.

This summer also helped to prepare me for my future work and provided incredible networking opportunities. I met with the leaders of Elephants Without Borders, a group that collars and tracks elephants as they move between countries in southern Africa. They hope to use information about elephant movements to stimulate the development of trans-frontier conservation areas that will protect elephants, as well as other wildlife, and provide places for them to disperse to reduce pressure on overburdened areas such as Chobe National Park. They have offered to work with our team, offering their data on elephant movements and we are currently discussing how we can collaborate to publish papers about elephant movements both within and outside of protected areas of southern Africa.

Timothy Fullman is a master's student in Interdisciplinary Ecology in the School of Natural Resources and Environment. He holds an academic year CAS FLAS fellowship (2008-09) and was also a recipient in 2007-08. *He received support for his summer work from an Africa Seed Grant (Cleveland Metroparks Zoo), a UF Tropical Conservation and Development Field Research Grant, and an IDEA WILD grant.*