

Help for the Hippos of Zambia

By Deanne Estrada

Its name means “water horse,” apt for the hippopotamus, which spends most of its life in deep water holes. But in Zambia’s Luangwa River region, drought, deforestation, and farming are threatening the streams the hippos call home.

Using aerial and satellite images, rain gauges, and soil and water samples, Conrad Heatwole, associate professor of biological systems engineering, is studying how agriculture, commerce, and tourism affect the water supply and, in turn, the wildlife in Zambia’s South Luangwa National Park. Though satellite imagery has been used for decades to detect changes in land use, this region has not been studied in detail. “Assessing impacts is mostly educated guessing at this point,” Heatwole says. “One of my goals is to use field research on runoff and erosion to help provide reliable answers.”

Eastern Zambia has a natural weather pattern of dry years and rainy ones, so drought followed by flooding is common. Local farming practices have made the situation worse. As the population has grown, farmers have turned to the slash-and-burn clearing of trees and planting their crops of corn, peanuts, and cotton in the ashes. This increases runoff, Heatwole says, carrying silt into the streams where the hippos live. As silt builds up, it makes the river shallower, crowding the hippos into the remaining deep areas, where they are susceptible to disease, predators, and poachers.

Heatwole’s techniques also are being applied in the Andean region of Bolivia and Ecuador where poor practices in farming, grazing, and forestry are eroding the soil and threatening biodiversity on the steep slopes. Researchers there hope to use satellite and aerial images with vegetation, soil, water, and weather data to determine which areas most need protection and which are best suited for cultivation.

The projects in Africa and South America are among five long-term research activities of the Sustainable Agriculture and Natural Resource Management Collaborative Research Support Program, managed at Virginia Tech and funded by the U.S. Agency for International Development. On both continents, the goal is to increase food security and teach farmers how to make a living without threatening biodiversity and natural resources. In other words, what’s good for hippos also helps the people.