



Research to protect, treat and cure animals.

## Seeing the forest through the trees: Kibale EcoHealth Project assesses disease prevention

By Heather Grimshaw

Natural habitats provide more than shelter for primates in Kibale National Park, an African forest in Uganda. In fact, research funded by Morris Animal Foundation (MAF) shows that forest degradation and clearing affects the health of people as well as the survival of primates and domestic livestock. Scientists discovered that disease transmission among the three species spikes in areas of forest degradation, and they identified specific human behaviors that influence susceptibility to disease. Both findings could be used to prevent or limit disease transmission in the future.



The Kibale EcoHealth Project, which began in 2004 with support from MAF, comprises epidemiology, molecular biology, primatology and wildlife-conservation components. It has yielded several important discoveries and has the potential to improve countless lives, including those of the highly endangered red colobus monkey.

On an academic level, the project provides a unique training platform for American and African medical students. On an animal preservation level, it sheds new light on the ripple effect of manmade environmental change. It is directed by lead researcher Dr. Tony Goldberg of the University of Wisconsin–Madison; other key scientists include Dr. Innocent Rwego of Makerere University, Uganda, who is manager of the project and former veterinarian for the Mountain Gorilla Veterinary Project, Dr. Colin Chapman of McGill University and Dr. Tomas Gillespie of Emory University.

As forests shrink, all three species interact more closely within the remaining habitat. Livestock graze in fields occupied by primates, and people interact more closely with livestock and primates. As a result, the three species are prone to exchange different types of bacteria such as *E. coli*.

“If we understand the whole system, we should be able to protect everyone’s health,” says Goldberg, director of the program and also an honorary lecturer at the partner institution, Makerere University in Uganda.

To obtain scientific data, researchers evaluated three small forest fragments and tested genetic relationships of bacteria found in people, livestock and primates living in these fragmented areas. Moving forward they will identify and test intervention methods to prevent disease transmission among species.

“By increasing our understanding we can actually make a difference,” says Goldberg.

Their work—which also identified human factors involved in disease transmission—was recently published in the Centers for Disease Control and Prevention journal titled *Emerging Infectious Diseases*. Rwego has also discovered exciting medical trends that extend to other primate populations, including gorillas, Goldberg says.



“We are making significant inroads to solving the problem,” he adds.

The four human behaviors that increase risk for disease transmission include living near a disturbed habitat fragment, tending livestock, collecting water from open sources and experiencing gastrointestinal symptoms. While more work is needed to understand the direction of cause and effect, it will soon be possible to conduct targeted disease-transmission intervention, Goldberg says. He adds that the research has provided invaluable information in the form of an expanded toolkit to identify, fight and prevent disease transmission.

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