

Researchers provide fascinating insights into elephant behavior, conservation issues

February 28 2012, By William G. Gilroy



Last year, Kenya lost 278 elephants to poachers, as compared to 177 in 2010. On the continent of Africa as whole, elephants have declined from an estimated 700,000 in 1990 to 360,000 today due to the demands of the ivory trade.

Spend some time with University of Notre Dame researchers Elizabeth Archie and Patrick Chiyo and you'll gain a better understanding of just what a tragic loss elephant poaching is.

A thinking, reasoning species with extraordinary memories, a strong sense of family and caring and nurturing natures are increasing at the risk of extinction.

Archie's Notre Dame lab combines fieldwork and genetics research to understand the causes and consequences of social behavior in wild mammals. Her research team examines how migration, mating and social patterns impact the genetics and evolution of a species and its fitness and susceptibility to diseases.

Archie, Clare Boothe Luce Assistant Professor of Biology, and Chiyo, a Moreau postdoctoral fellow, use research techniques that range from behavioral observations of wild animals to noninvasive genetic tools to genotype species and their parasites and patterns.

The research lab studies baboons and [elephants](#) in [Kenya](#). Archie and Chiyo work with the Amboseli Elephant Research Project (AERP), located just north of Mount Kilimanjaro in Kenya, which is the longest running study of wild elephants.

In the field, the researchers observe the behavior of the elephants and collect samples for genetic analysis, usually from noninvasive sources such as dung. In their Notre Dame lab, they use the dung samples to characterize the parasites infecting individual animals and extract DNA to conduct genetic analyses.

Their fieldwork and genetic analyses are revealing fascinating insights into elephant population genetics and social behavior, as well as how human activities alter elephants' social and genetic structures.

Their research has found, for example, that female elephants form strong and lasting social ties with the members of their natal core group. Male elephants, by contrast, disperse from their core natal group at maturity and never join a new core group permanently.

Poaching interrupts the beneficial female social relationships and could lead to lower reproductive rates for females, further reducing the

species. For male elephants, age is an important predictor of reproductive success for male elephants. Poaching appears to reduce the age of first reproduction for males and lead to a reproductive skew, which may increase the rate at which genetic diversity is lost from natural elephant populations.

Archie and Chiyo have also investigated the “crop raiding” behavior of African elephants. Scientists have determined that crop raiding is a male elephant behavior and that not all males participate. The Notre Dame researchers found that up to 20 percent of males may be crop raiders, and males are twice as likely to raid at their reproductive peak.

Males older than 45 were twice as likely to raid, although some males in their 20s also participated in the raiding. The researchers discovered that younger males were more likely to raid if they were following older role models.

These and other research insights are demonstrating how genetic tools can be used to understand and preserve social species.

Provided by University of Notre Dame

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