

Innovative monitoring technique can help protect the world's elephants, study finds

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A quick and cost-effective approach to monitoring the health of elephant populations could help measure the impact of poaching on the animals, according to a new study involving the University of Stirling.

Working with the Southern Tanzania Elephant Program (STEP), the Tanzania Wildlife Research Institute (TAWIRI), and the Wildlife Conservation Society (WCS), Stirling scientists carried out a rapid demographic assessment (RDA) – assessing the sex, age and group structure – of six important elephant populations.

It is the first time that the RDA method has been used to monitor elephants on a national scale and over a prolonged period. Following the success of the study, experts now believe the approach could provide vital data on the impact of poaching for the [ivory trade](#) – and identify areas where progress is being made in combating the problem.

Dr. Jeremy Cusack, a Postdoctoral Research Assistant in Biological and Environmental Sciences, worked on the project – part of the Tanzanian Government's National Elephant Management Plan – alongside colleagues Dr. Rocío Pozo, Research Assistant, and Josephine Smit, a Ph.D. student.

The team observed that elephants in Tanzania's northern protected areas, which benefit from higher levels of tourism and protection, are not as affected by poaching, compared to those in the less-visited areas in the south and west of the country. The scientists also measured the

proportion of elephants without any tusks.

Dr. Cusack said: "We found that populations in the north of Tanzania, such as the Serengeti and Tarangire, had healthy [population](#) structures. These elephants are faring well because they benefit from adequate resources for protection and tourism.

"However, we observed that populations in Tanzania's less-visited and under-resourced southern protected areas had altered age structures, with fewer calves and old individuals. There were also fewer adult males relative to the number of adult females, and a lower number of dependent individuals per adult female.

"We also found that poached populations had a much higher proportion of tuskless individuals, at more than six per cent."

He added: "These characteristics are signatures of poaching for the ivory trade which has affected Tanzania's western and southern elephant populations to a much greater extent than the northern populations.

"It will take many years and, in some cases, decades of security and stability to heal and return to a healthy and normally functioning population structure."

Detail

Currently, elephant population trends are generally studied through the monitoring of elephant numbers. However, the RDA method – pioneered by elephant expert Dr. Joyce Poole in the 1980s – provides a more detailed insight into the health of elephant populations.

A primary goal of the research was to develop the RDA method as a tool to aid elephant protection by assessing impacts of poaching for the ivory

trade across Tanzania.

Researchers from STEP and TAWIRI visited each protected area for between two and four weeks, recording the age and sex of up to 400 different elephants across the landscape. They also used data from the long-term monitoring study of STEP in Ruaha-Rungwa, which holds information on more than 1,200 identified individuals.

Dr. Pozo said: "This study highlights, for the first time since the 1980s, the effectiveness of rapid and relatively cheap demographic surveys for assessing the health of elephant populations under differing levels of poaching pressure."

"This helps managers to prioritise protection resources to save [elephants](#) for future generations. We are delighted to hear that Tanzanian Government scientists have adopted this methodology as a tool for assessing health of elephant populations."

Recovery

Ms Smit added: "We hope elephant experts and Government research institutes in other countries can apply the RDA method for monitoring populations. This approach will hopefully help to show signs of recovery of elephant populations in the coming years."

The study, "Age structure as an indicator of poaching pressure: Insights from rapid assessments of elephant populations across space and time," is published in *Ecological Indicators*.

More information: Trevor Jones et al. Age structure as an indicator of poaching pressure: Insights from rapid assessments of elephant populations across space and time, *Ecological Indicators* (2018). [DOI: 10.1016/j.ecolind.2018.01.030](https://doi.org/10.1016/j.ecolind.2018.01.030)

Provided by University of Stirling

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