Estimation of population size and density of Thornicroft's giraffe (*Giraffa camelopardalis thornicrofti*) using photographic data.

By Kelly Halloran

Abstract:

Photography is a minimally invasive way to gather information on wildlife that requires little to no training. Furthermore, digital cameras and the internet allow for rapid exchange of large quantities of photographs on a global scale. However, photographic data is rarely used in conservation studies. This project uses a photographic database created by the Zambian Carnivore Programme to estimate population abundance and density of Thornicroft's giraffe (*Giraffa camelopardalis thornicrofti* Lydekker) in the Luangwa Valley of eastern Zambia. Photo-recognition software was used to identify individual giraffes in the database according to unique spot patterns. The results generated by the photo-recognition software were then verified by reviewing the photographs by hand. Once all the individuals photographed were documented, Capture-Mark-Recapture methods were employed to estimate population parameters. Finally, the performance of the recognition software with respect to photograph quality was analyzed. While the use of photo-recognition software allows for speedy processing of large quantities of photographs and the continual input of new photographs into a database, this method exhibited a good deal of error. The software incorrectly identified an individual 27.5% of the time. With improved photo-recognition software and some photograph quality control, individual animals could be tracked over extended time periods with little cost. Therefore, this method of photographic data analysis could have important conservation implications.