

Combining technology and ancient tracking to save the cheetah

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Credit: Heriot-Watt University

A life scientist from the School of Energy, Geoscience, Infrastructure and Society is investigating whether technology can be combined with the ancient tracking skills of Namibian hunter-gatherers to help save the cheetah and, eventually, other endangered species.

The research will determine whether the existing Footprint Identification

Technique (FIT) can be adapted to find out if individual cheetahs are related. The [technique](#) could give wildlife conservationists a cheaper, quicker and non-invasive monitoring technique that will have applications across all endangered [species](#).

Cheetahs in the wild are, like many species, struggling to survive. With numbers reduced from an estimated 100,000 at the start of last century to around 7,000 today, they are classed as 'vulnerable'.

The [project](#) will concentrate on addressing the poor genetic variation of the cheetah, a problem that is often overlooked in conservation projects which instead focus on finding solutions for other important challenges including habitat loss, human-wildlife conflict and the pet trade.

The lack of genetic variability among the species leads to inbreeding and health problems, ultimately resulting in a further decline of the population.

Traditional means of establishing genetic relationships between cheetahs are invasive, time consuming and expensive, including DNA analysis from tissue samples such as blood, hair, stool or saliva.

Larissa Slaney, a PhD student from Heriot-Watt University, is examining whether the Footprint Identification Technique (FIT) can be adapted to find out if individual cheetahs are related.

Larissa said: "By analysing digital images of their footprints and using some of the knowledge of native trackers, the FIT technology, developed by WildTrack, can already identify cheetahs and other species at the individual, sex and age-class level with more than 90% accuracy.

"First indications suggest that the current technology is picking up something about the relatedness of individual cheetahs. However, this

crucial research project will help develop a new algorithm for FIT and improve its accuracy so it will hopefully be able to determine the relationship between individual cheetahs.

"This method can then be used in population monitoring and is particularly important in relocation cases to avoid inbreeding between related cheetahs.

"The San bushmen are renowned for their incredible tracking skills and can read a footprint like a book. If we can preserve that knowledge in the form of the cutting-edge FIT technology, it will offer invaluable support in the conservation of these amazing, vulnerable animals and hopefully other endangered species too."

To help to further develop and test the FIT software, Larissa needs to collect footprints and DNA from a captive cheetah population, analyse both and compare the results. Larissa is working with the N/a'an ku se Foundation, a conservation charity in Namibia, that will give her access to a large group of cheetahs. In addition, Larissa will work with zoos that hold other subspecies.

Larissa continues, "Everyone loves cheetahs, but most people don't realise that this beautiful species is in trouble. I have chosen science crowdfunding to raise awareness and to get the public involved in helping the [cheetah](#). If we can demonstrate that the FIT technique can be adapted to provide vital information on the interrelatedness of these increasingly rare animals, it will support their chance of survival and, hopefully, that of other endangered species as well."

Provided by Heriot-Watt University

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