Field Validation of Footprint Identification Technology on Free-roaming Cheetahs in Namibia

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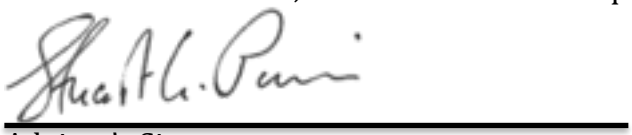
Abstract

Cheetahs are one of the three big cat species in Africa. Convention on International Trade in Endangered Species (CITES) list cheetahs as threatened. Scientists estimate the current population at between 9,000 and 12,000 individuals left in the wild. However, this population number is unreliable. The stronghold population for cheetahs is currently in Namibia, where human-wildlife conflicts generally result in the killing of the predator species. Better information is needed on the number of cheetahs in Namibia, as well as the rest of their habitat range. Farmers also want a way to identify individuals that are actually killing livestock, rather than indiscriminately shooting all cheetahs on their property. Footprint Identification Technology (FIT) offers a way of non-invasively monitoring animals by identifying individual animals, as well as sex of an individual and the age-class. Up to this point, FIT has only been tested in captivity.

Footprints were collected from 15 free-roaming cheetahs in Namibia over a three-month time period in the dry season. The individual animals ranged in age class, sex, and the habitat's substrate types. The footprints ranged in quality from very poor to very clear, depending on clarity, age, and substrate type. Each footprint was given a quality ranking, which could then be compared to the ability of the software to recognize individuals and sex of individuals. The software produced dendograms and percent confidence intervals that were compared between quality of footprints and the use of sub trails versus no sub trails. Individual footprints were compared for the identification of sex of individuals. Different quality prints were compared their ability to correctly predict the sex of an animal, as well as the percent of misclassification within trails of footprints for the different sexes.

The results indicate higher quality footprints work better in the software. Lower quality prints are likely to overestimate the amount of animals present in an area, as well as overestimate the amount of males present in the area. The use of sub trails raised the confidence intervals in the software when predicting number of individuals. However, the results show that quality is more important than quantity.



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