

Carnivores in conflict: brown hyaena in South Africa



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Background

As terrestrial landscapes become more intensively used by people, for agriculture and other uses, there is increasing pressure on species that require large areas to survive. In order to ensure that viable populations of these species can survive in future, species planning is essential, combined with up to date information on population status, threats and trend.

Brown hyaena (*Hyaena brunnea*) are classified as Near Threatened (IUCN Red List) and the total population is decreasing. It is estimated that there are fewer than 1,700 brown hyaena in South Africa, where many populations exist in unprotected areas and are shot, poisoned and trapped in predator control programs. Such activities have drastically reduced numbers – for conservation of the species it is essential to know how many brown hyaena live outside protected areas. Many protected areas are too small for viable populations of large carnivores, therefore, areas that can support brown hyaena outside protected zones are likely to be fundamental for their future survival. Species that have little economic impact on livestock are tolerated, but killing of “problem” animals by government and landowners in South Africa is generally permitted and often unquantified. The extent of this human-wildlife conflict needs to be assessed and resolutions sought, along with improved biodiversity conservation awareness and sound conservation management practices.

The project takes place in several study areas (figure 1), all within 50 km of the Pilanesberg massif, northwest of Johannesburg in South Africa. This is a savannah area within the Southern African Bushveld. The study areas include Mankwe Wildlife Reserve (4105 ha protected since 1982), Pilanesberg

National Park (50,000 ha protected since 1979) and Kgaswane Mountain Reserve (5,000 ha). Mankwe Wildlife Reserve provides a unique conservation area for wildlife, with management strategies and conservation projects in close liaison with South African National Parks. The Reserve provides habitat for over 40 mammal species, 300 bird species and 85 grasses and herbaceous plants. Since the creation of Pilanesberg National Park, over 6,000 individual animals have been reintroduced, including all species that were thought to exist here before white settlers arrived, with the exception of the spotted hyaena. Kgaswane is designated to protect the unique habitat of the highest regions of the Magaliesberg Mountains and has many species of antelope and naturally occurring brown

hyaena, black-backed jackal (*Canis mesomelas*) and leopard (*Panthera pardus*).

Project overview

The project aims to assess the biodiversity and conservation value of commercial areas (such as farmland and game ranches) outside protected areas through research on carnivores, using the brown hyaena as a focal species. The rationale is that if carnivores can survive well outside protected areas, it is likely that many other endangered animals can too, as these will include the prey species of which carnivores require a good supply to survive.

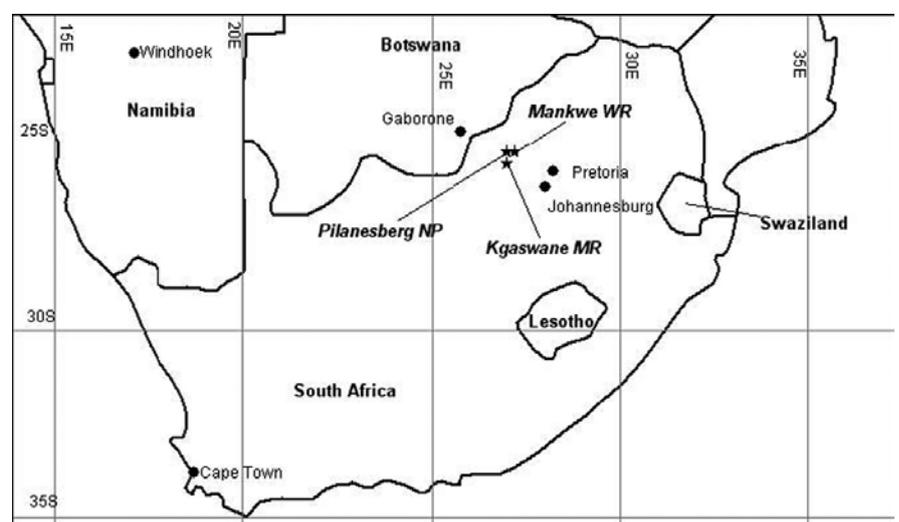


Figure 1. Location of study areas in South Africa



Project objectives:

- Design suitable survey methods for brown hyaena populations.
- Assess and compare brown hyaena presence, abundance, density, diet and habitat use within areas of different levels of protection and land use.
- Determine actual and perceived brown hyaena threats to livestock and the extent of 'control'.
- Quantify brown hyaena density in northwest province and determining source/sink areas.
- Genetic analysis to investigate consequences of isolation inside and outside protected areas.
- Promote human-wildlife coexistence through training, educational support, and publicity,

The project has received Earthwatch support since 2006. Volunteers assist with data collection on carnivore and prey

densities, distribution and ecology. They participate in direct observation, line transect, radial call-in (playing recordings of animal calls to attract hyaenas) and spoor based field sign surveys. In 2008 volunteers also helped anti-poaching patrols to locate snares and assisted with fire and game management.

Increasing knowledge on status, threats, and the effectiveness of management interventions for species conservation and protected area management is a key goal of Earthwatch's Ecosystem Services Research Area.

Outcomes and actions

In 2008 the project recorded 615 hyaena latrines and carried out 46 call-ins resulting in sightings of nine brown hyaena, 22 lions, 30 jackals and one caracal. To assess nocturnal activity the team completed 270 km of night spotlighting and 45 camera trap nights at Mankwe. The project took a step forward by collaring another brown hyaena in Pilanesberg, bringing the total to three. The hyaena was tracked for four months and alongside diet data, the results will inform investigations of habitat use and ranging behaviour. Collars have also been fitted to hyaena at Madikwe and other game reserves, with data collection ongoing. The project has obtained funding for six more collars to be fitted in 2009 that will provide further data on habitat use, ranges and ecology.

DNA analysis is being carried out on 90 samples collected. The aim is to refine the technique for brown hyaena, as to date there are no specific markers for the species. A second aim is to see whether DNA can be obtained from samples other than blood and tissue, i.e. hair or faeces. The data should reveal much about the genetic variability of the animals inside and outside protected areas, which is important to ensure they do not become genetically isolated. It will also produce information on population viability inside protected areas, and whether or not action to improve this is necessary to ensure long term survival.

Using data from a range of sources, the project has been involved with gathering presence/absence data from approximately 150 sites across the



North West Province to calculate a density estimate for the area. This allows continual refining of population estimates and the current conservation status, as well as development of higher resolution distribution maps for the species. The information has already helped update the IUCN Red List status of brown hyaena. The scientists will review the status of brown hyaena in South Africa and the current threats, to compare with other areas of their range and draw wider conclusions for the species.

Ninety nine landowner questionnaires in the North West Province were undertaken by PhD student Michelle Thorn. This data is helping the project scientists with identifying issues to apply in modifying their research to relate to other aspects of brown hyaena ecology and conservation. Results from the questionnaires will also help identify and quantify the levels of persecution of brown hyaena in an unprotected area and provide more detail on current threats in the region.

The project is helping to engage local landowners in carnivore conservation issues and clarify the economic impact predators have on livestock. The scientists are also helping the Northwest Parks and Tourism Board in South Africa to gain an idea of how many brown hyaena and other carnivores exist within their parks and how important their populations are to overall conservation of the species. Mankwe Wildlife Reserve will

use the first estimates of brown hyaena on their land for monitoring purposes and have helped to identify other potential threats to the species that were not previously documented.

Lead scientist profiles

Dr Dawn Scott is a Principal Lecturer in Ecology at the University of Brighton, UK, specializing in mammal predator and prey ecology. In 2000 she completed a PhD on ecology of desert rodents in Jordan, and then became biodiversity research co-coordinator for a project in Kafue National Park, Zambia. She holds a post-graduate teaching qualification and has over 10 years of academic research experience. She has undertaken several field research projects investigating issues of human-wildlife conflict in Jordan, Chile, Zambia, South Africa, Indonesia and the UK.

Dr Richard Yarnell is a Senior Lecturer in Biodiversity at Nottingham Trent University, UK, specializing in human-wildlife conflict. He completed his PhD in 2005 on the impacts of fire and grazing on small mammal biodiversity in South Africa before working as CEO for the Badger Trust in the UK. He has since returned to academia to pursue his research interests, and currently has two PhD students undertaking studies into human-carnivore conflict in South Africa and Europe.

Additional key scientists

Dr Andrew Overall – University of Brighton, UK

Michelle Thorn – University of Brighton, UK

Louisa Richmond-Coggan – Nottingham Trent University, UK

Dr Philip Bateman – University of Pretoria, South Africa

Prof Elissa Cameron – University of Pretoria, South Africa

Kelly Marnewick – De Wildt Cheetah and Wildlife Trust, South Africa

Collaborative organisations

- Northwest Parks and Tourism Board, South Africa
- De Wildt Cheetah and Wildlife Trust, South Africa

Project website

http://www.earthwatch.org/exped/scott_research.html

Key publications

Thorn, M., Scott, D., Green, M., Bateman, P. & Cameron, E. (2009). Estimating brown hyaena occupancy using baited camera traps. *South African Journal of Wildlife Research*, 39(1): 1-10

Wiesel, I., Maude, G., Scott, D. & Mills, G. (2008) *Hyaena brunnea*. In: IUCN 2008. 2008 IUCN Red List of Threatened Species. Available at www.iucnredlist.org

