



## FIELD REPORT

**Marketing title:**

South Africa's Brown Hyaenas

**Research site/ region:**

Mankwe Wildlife Reserve;  
Pilanesberg National Park; Northwest Province

**Country:**

South Africa

**Protected area status:**

Mankwe Wildlife Reserve;  
Pilanesberg National Park;

**Date field report completed:**

1 August 2010

**Period covered by this report:**

1<sup>st</sup> January 2009 to 23<sup>rd</sup> January 2010

**Report completed by:**

Dr Dawn Scott

Dear 2009-2010 volunteers,

**Teams 2, 3 and 4** have all visited us in the past six months. I have got to say that the volunteers from Earthwatch just seem to be getting more and more hardworking.

We started the winter data collection with the “**teen team**” - twelve fantastic teens from the USA, UK and Germany, accompanied by Nancie Dohan who could not be more suited to being a Teen Team Facilitator. These teens worked so well together and were so much fun to be with; the song “bonkers” will always remind me of the two weeks spent with them. One of the highlights was hosting 80 school children from a local school. The teens put together a wonderful conservation programme for the local children and it was good to see the interaction between youngsters from all nationalities.



**The Teen Team**

**Team 3** were also a great team, once again they worked together so well that it made collecting the mountain of data extremely enjoyable. A great deal of camera trapping, latrine surveys and most importantly raising awareness in the Pilanesberg area was achieved by this energetic team. This team were also the only group this year to take part in night-time call-ins, where they were rewarded by a pride of lion, brown hyaena and jackal. Teams 2 and 3 were also of great assistance to the management team of Mankwe during the burn management programme.

**Team 4** was probably our most international team with our first volunteer from Japan and another from the Ukraine. Despite the language barriers, this team was able to meet the many objectives we hoped to achieve in the two weeks. We were also lucky enough to have excellent sightings of hyaena, the most impressive being the three cubs that we observed last year with the January team. It was very rewarding to see that the all three cubs have survived to adulthood, and we were privileged enough to see them playing and hear them vocalising. The team were also fortunate enough to assist in the fitting of a GPS device to a Cape Vulture, which is part of a long term study being conducted at Mankwe.



**Team 4**

2010 started off very positively at Mankwe, with the arrival of our team of six **South African teachers**. They were part of an Earthwatch initiative to train local teachers about the brown

hyaena project and equip them with ideas and conservation methods to take back to their classrooms. The expedition was a great success and we couldn't have asked for a more enthusiastic bunch of natural science teachers. The teachers spent many hours working with us both in the field and in the classroom to learn more about conservation management, especially relating to the conservation of the brown hyaena.

One of the biggest success stories for this team was capturing the images of three poachers and five dogs on a camera trap set up to photograph brown hyaena. The camera trap was baited with rotten meat to attract brown hyaena but instead it attracted the poacher's dogs and the poachers followed. We handed the photographs to the police and the photographs led to the arrest of nine poachers and the confiscation six dogs. The case is pending and due to be tried in May 2011. Since then, the poaching at Mankwe has been greatly reduced and we are now using camera trapping as an anti-poaching method.



**Poachers caught on camera**

**Team 6** were accompanied by the film crew Jo and Michael from Earthwatch, who were assigned to make a short documentary on the project. The documentary, *South Africa's Brown Hyaena*, is now complete and can be viewed on You Tube – they have done a great job! Team 6 were a fantastic group of volunteers who instantly gelled as a group, and I think some lasting friendships have been made. The biggest success story for this group was the difference they made to 80 school children visiting from a local school. The volunteers spent endless hours preparing activities to educate the children in a fun and informal manner. Their efforts were rewarded by an impromptu singing and dancing display by the children.

The project has also led to wonderful “spin offs” for the local schools. One generous volunteer very kindly donated computers, printers and scanners to both of the schools, and others have promised to assist some of the children with their education.

In total for this year we have covered 371km in our latrine surveys, finding over 600 latrines, we have driven 1042km in our spotlighting surveys, sighting 23 brown hyaenas, and we have repeated our 14 night call-ins with response from two brown hyaenas and 13 lions. We have 350 hyaena photos to be identified from 500 completed trap nights of drag baiting, and may have even more once all our photographs are processed!

Thanks to all the Earthwatch volunteers for all of the hours you have spent looking for poo, the endless data entry and your enthusiasm and support for project. We would not be able to meet all our objectives without you!

Lynne x



**Working on the transect surveys**

## **SECTION ONE**

### **Top highlight from the past field season**

This year we have had a significant increase in community involvement. In January 2010 we hosted a South African Teachers team, which helped us to develop classroom resources and extend local community participation and involvement in the project. We also had a total of 213 children from four different local schools visiting the project to learn more about carnivores and conservation in their area.

Drag baiting with the camera traps is proving very successful and we are now close to having sufficient data to give detailed accounts of the numbers and distribution of brown hyaenas at Pilanesberg National Park (PNP), which can be used as a base line to validate other methods. We have also found a novel use for our camera traps in capturing images of poachers and then using our pictures as evidence in court to prosecute them!

We are also starting to expand the project looking at other scavengers in the ecosystem including vultures, jackals and dung beetles.

We have had three peer reviewed scientific publications relating to the project this year. One considers which methods should and can be used for wider monitoring of hyaenas; another looks at the diet in comparison to other carnivores in the area; and the third investigates the use of camera traps for estimating occupancy of hyaenas. This information is helping us get a better idea of the distribution, habitat requirements and population density of hyaenas across the region which, in turn, helps to inform the conservation assessment and status of the species.

### **Non-technical overview of results**

To reliably determine conservation status and threats to carnivores we need accurately assess their population size and population dynamics across the landscape. Over the last few years we have been using a suite of survey techniques to validate methods and get more accurate estimates of brown hyaena populations to help provide recommendations for brown hyaena monitoring and surveys. Focal studies of two different sites have allowed us to intensively study a few populations, enabling us to test and validate methods. Methods include survey techniques such as latrine surveys, spotlighting and call-ins, as well as population estimates using camera trapping and DNA collection from pastes. In 2009-2010, we have continued our spotlighting and latrine surveys, which are contributing to a comprehensive data set that we can use to undertake spatial and temporal analysis on sightings and latrine deposition. We have extended and developed our camera trapping studies which, along with radio-tracking and DNA analysis, will give us an excellent picture of the ecology, behaviour and population structure of brown hyaenas in the two different areas. As carnivores are difficult to survey, extensive effort is required to enable this detailed analysis which can then be developed to apply to other areas.



**Setting the Camera Trap**

Outside these focal sites we are surveying a wider area using radio-tracking and extending our land-owner questionnaires to refine estimates of species distribution and determine attitudes and threats to this species. Brown hyaenas are just one species that function as scavengers in this ecosystem but this role tends to be overlooked, meaning that many scavengers are viewed poorly and persecuted. Without these scavengers within ecosystems, ecosystem health and functionality is reduced. Hence we need to develop and engage local communities to help monitor these species and raise the perception of their value.

## Data Summary: (January 2009 – January 2010)

Table 1: Latrine Data – for spatial distributions, territory range, diets and density.

Site Team	Distance driven (km)	No. of Brown Hyaena latrines	Frequency of latrines (latrines per km)
<b>PNP</b>			
January 09	77.5	49	0.63
August 09	112.5	274	2.44
November 09	66.3	118	1.78
Jan 10 team 5t	56.2	55	0.98
Jan 10 team 6	59.3	70	1.18
<b>Mankwe</b>			
January 09	26.5	0	0
August 09	80	28	0.35
November 09	55.8	7	0.13
Jan 10 team 5t	41	1	0.02
Jan 10 team 6	6.7	0	0
<b>Total</b>	<b>371</b>	<b>602</b>	



One of the other visitors to the reserve: Leopard caught by camera trap

**Table 2: Spotlighting Data - for density estimates or predators and prey. BH = Brown Hyaena, J = Jackal, Li = Lion, G = Genet, ST = Steenbok, SH = scrub hare, C = Caracal, D = duiker, SpH = Spring hare, Le = Leopard, WC = wild cat (Honey badger, Porcupine, rock rabbit, serval, bushbabies and aardwolf were also sighted)**

Site Team	Distance driven (km)	BH	J	Li	G	ST	SH	C	D	SpH	Le	WC
<b>PNP</b>												
January 09	144.2	7	7	4	1		7		1		1	
August 09	216.2	3	13	2	7	16	33		3			1
November 09	143.8	6	7	2	6	27	29	2	1			1
Jan 10 team 5t	35.8		4			3	6	1			1	
Jan 10 team 6	155.3	6	12	1	2	4	11		1			
<i>Total</i>	<i>695.3</i>	<i>22</i>	<i>43</i>	<i>9</i>	<i>16</i>	<i>50</i>	<i>86</i>	<i>3</i>	<i>6</i>	<i>0</i>	<i>2</i>	<i>2</i>
<b>Mankwe</b>												
January 09	17.7		1		1							
August 09	170.9	1	16		3	12	18	3	1	3		
November 09	52		16		2	7	1		1	4		
Jan 10 team 5t	66.6		5		2	3						
Jan 10 team 6	40.1		6		2	4	1			3		
<i>Total</i>	<i>347.3</i>	<i>1</i>	<i>44</i>	<i>0</i>	<i>10</i>	<i>26</i>	<i>20</i>	<i>3</i>	<i>2</i>	<i>10</i>	<i>0</i>	<i>0</i>
<b>Totals</b>	<b>1042.6</b>	<b>23</b>	<b>87</b>	<b>9</b>	<b>26</b>	<b>76</b>	<b>106</b>	<b>6</b>	<b>8</b>	<b>10</b>	<b>2</b>	<b>0</b>

**Table 3: Call-in Data – for annual monitoring populations changes in hyaenas**

Site Team	Number of surveys	Brown Hyaena	Jackal	Lion	Caracal
<b>PNP</b>					
August	12	2	16	13	
<b>Mankwe</b>					
August	2		3		
<b>Totals</b>	<b>14</b>	<b>2</b>	<b>19</b>	<b>13</b>	<b>0</b>

**Table 4: Camera trap data**

<b>Site Team</b>	<b>No. of sites surveyed</b>	<b>No. of cameras deployed</b>	<b>Total No. of trap nights</b>	<b>Total No. of hyaena photos</b>	<b>No. Individuals captured (includes re-captures)</b>
<b>PNP</b>					
Jan-09	10	20	118	54	13
Aug-09	9	18	72	8	4
Nov-09	9	18	144	32	6
Jan 10 team 1	4	8	64	29	2
Jan 10 team 2	5	10	80	113	6
<i>Totals</i>	<i>37</i>	<i>74</i>	<i>478</i>	<i>236</i>	<i>31</i>
<b>Mankwe</b>					
Aug-09	3	3	8	110	2
Nov-09	2	2	11	0	0
Jan 10 team 1	3	3	9	0	0
Jan 10 team 2	1	1	5	0	0
<i>Totals</i>	<i>9</i>	<i>9</i>	<i>33</i>	<i>110</i>	<i>2</i>



**Hyaena photographed by camera trap**

## **School visits**

**Total of 213 children from local schools visiting the project.**

30 students from Ntheae Primary School

31 students from Kgabutle Secondary School

72 students from Selly Park Primary

80 students from Fields College



**Teens with local school**

## **Acknowledgements**

We would like to thank our field team Dougal McTavish, Louis Phipps, Lauren Esterhuizen, Michelle Lidson and Louisa Richmond-Coggan, as well as all the support staff at Mankwe Wildlife Reserve, for all of their input and support. We would also like to thank Stephen Dell, Mike Crowther and Peiter Leitner at Pilanesberg National Park and all other park wardens for their continued support. We are grateful to all the landowners who have granted us permission to conduct surveys on their land or responded to our questionnaires. Many thanks go to all the teachers and support staff who have made the school visits so successful. We would like to thank our collaborators at the University of Pretoria for their continued support, Michelle Thorn for input in publications and Mark Allen for GIS support. Brighton University and Nottingham Trent University need to be acknowledged for their tolerance and time they allow for the PI's involvement with the project. And finally we would like to thank Earthwatch and all Earthwatch volunteers for their support and effort throughout the last year, without which the project would not be possible.

## **SECTION TWO: TECHNICAL RESULTS**

### **REPORTING ON RESEARCH OBJECTIVES**

#### **Objective 1:**

Design a rapid assessment method for surveying brown hyaenas by comparing and validating a range of different field survey methods used to determine presence (detection), abundance, and monitor population trends.

#### **Progress towards/against objective**

This objective is near completion. Recently we have two scientific papers regarding aspect of this objective published.

Thorn, M., Scott, D., Green, M., Bateman, P., Cameron, E. & Yarnell, R. Comparative performance of sign surveys, spotlighting, camera trapping and audio playbacks in a landscape-scale carnivore survey. Submitted to Journal of Wildlife Management.

Thorn M., Scott, D.M., Green, M., Bateman, P., Cameron, E. (2009) Camera Trapping as a Means of Estimating Brown Hyena Occupancy. South African Journal of Wildlife Management. Accepted.

There are still potential developments within this objective. One of the issues raised is accuracy of different methods rather than precision. Hence we are hoping to tie in more accurate estimates of densities with methods to compare accuracy. In light of our findings we are developed drag baiting with intensive camera trapping for mark recapture analysis to obtain population estimates. This has been very success full this year with over 350 hyaena photos collected from over 500 trap nights. Overall we have 900 camera trap nights in the three locations (Madikwe, Pilanesberg and farmland) to compare methods and densities. Population estimates from this data will help us to refine methods to improve accuracy of survey techniques, hopefully for another more focused publication. Methods are also being employed to determine effectiveness of population trend monitoring.

#### **Objective 2:**

Assess and compare brown hyaena presence, abundance, density, diet and habitat use within areas of different levels of protection and land use.

#### **Progress towards/against objective**

To investigate habitat use and ranging behaviour with are using VHF and GPS radio-collars. We have managed to collar five animals and intend to collar three more, but capturing has proved very difficult. The collared animals are in a combination of protected and farmland areas. Data is still being collected on this aspect and should be ready for analysis early 2011. We are hoping our 2010 Earthwatch volunteers will assist us in collecting this data.

Preliminary dietary analysis was published as:

Van der Merwe, I., Tambling C., Thorn, M., Scott, D., Yarnell, R., Green, M., Cameron , E. & Bateman, P. (2009) Determining diet composition and overlap of three carnivores by scat analysis. African Zoology. 44 (2): 288-291.

Samples are still being collected to increase the sample size to continue the dietary studies.

**Objective 3:**

Determine brown hyaena threats to livestock, both actual and those perceived by landowners, and assess the extent of hyaena 'control' through socio-economic based questionnaires.

**Progress towards/against objective**

In 2008/2009, 99 landowners' questionnaires were completed in the northwest province by our PhD student, Michelle Lidson. The data is currently under analysis and will be ready for publication late 2010. Another PhD student, Louisa Richmond-Coggan, has collected over 100 responses to her questionnaire survey from across South Africa, and she is continuing to receive responses. This will lead to a further analysis of distribution and land owner perceptions. We are hoping this data will identify issues that will enable us to develop and modify this project to assess other issues regarding brown hyaena ecology and conservation and integrate some of these issues into methods that Earthwatch volunteers can engage with collecting data on.

**Objective 4:**

Attempt to determine brown hyaena density in the northwest province by occupancy analysis and undertake GIS analysis to look at spatial patterns in an attempt to determine source and sink areas.

**Progress towards/against objective**

We have presence/absence data from a range of sources for approximately 150 sites across the North West Province. This is comprised of data from surveys, regional surveys, occasional reports, questionnaire data and data from our collaborators. 99 sites have been surveyed using questionnaires and field surveys undertaken in 50 sites across the region. This data has allowed us to produce new finer scale distribution maps for several carnivores within the northwest province (Thorn *et al.*, submitted). This information should be made available shortly. We are entering all the data into a fairly comprehensive GIS database which includes vegetation layers and other environmental data. This will enable analysis of spatial patterns in occupancy and abundance, and allow us to determine factors which affect this. We are hoping this ongoing development will be available in some format for dissemination in late 2010. We are also looking at modifying the questionnaires for Earthwatch volunteers to undertake, and cattle and game auctions and markets in order to get more data on distribution and threats, as well as using local contacts to investigate scavenger presence in protected areas.

**Objective 5:**

Through genetic analysis investigate the possible consequences of isolation between populations inside and outside protected areas, to determine their viability.

**Progress towards/against objective**

DNA analysis can help us understand the relatedness of animals from different populations, determine if certain protected areas have isolated populations and assess the possible impacts of isolation on population viability. One of the initial aims of the DNA analysis is to refine the technique for work on brown hyaenas. To date there are no specific markers for brown hyaenas

so we have been utilizing spotted hyaena markers to try to get them to work. Dr Andy Overall (our collaborating geneticist) has managed to get eight markers working.

The second aim of the DNA analysis is to see if we can get DNA from samples other than blood and tissue, i.e. pastes, hair or faeces. We have approximately ten tissue or blood samples from five sites in the region, along with approximately 90 pastes from animals at PNP and faecal samples from three sites. We have also been trying to obtain further DNA from using a biopsy darting method, but this is proving difficult. Progress is slow but looking positive, and we hope to get results by the end of 2010. We will continue to collect samples for DNA analysis.

**Objective 6:**

Promote human-wildlife coexistence through training, educational support, publicity and promotion via a range of media

**Progress towards/against objective**

The project has engaged in a wide range of publicity through a range of media and educational sources. We have had teachers, local school children and film makers on site with us during expeditions (see full list out outputs and activities in Section 2 below).



**The teacher team**

## PARTNERSHIPS

**Mankwe Wildlife Reserve:** Our field base and support staff, Lynne MacTavish is also in-country PI for the project.

**North-West Parks and Tourism Board (NWPTB):** NWPTB is a government agency that administers 14 protected areas; we work within several of these protected areas and are supported by their staff.

**University of Pretoria (UOP):** UOP academic staff Bill Bateman and Elissa Cameron are scientific collaborators on the project. UOP also currently hosts the GIS database site for terrestrial mammals into which our data is input, run by Tim Snow.

**Endangered Wildlife Trust (EWT):** An NGO with working groups in carnivore conservation, wildlife conflict and biodiversity stewardship. We are in collaboration with them to extend the project to address further conflict issues.

**Nature Conservation (NC):** A government agency that assists farmers with human-wildlife conflict. We are working with NC to identify conflict issues and build up regional maps of species distributions in the area.

## PROJECT DEVELOPMENT

### Changes to Project:

In the last four years we have met many of the objectives set out in the original research proposal and have modified some of these since to focus more on carnivores and brown hyaenas. We currently have a lot of data and on-going data collection relating to brown hyaenas and carnivores which over the next few years will be brought together publications, reports and reviews. As with any study, progress gives rise to more questions, and one theme that has been developing is focused on other scavengers within this system (vultures and dung beetles): how these scavengers interact, and what functional role they play within the ecosystem. We have undertaken ancillary pilot projects concerning these questions, and plan for their future inclusion in our work.



**Team 4 assisting with vulture project**

Therefore, we see the future of the project as continuing key elements of the hyaena work whilst bringing several questions to conclusion and expanding on the other areas of ecosystem function and biodiversity support. This will develop the project from a species-centered

approach to an ecosystem services focus with the scavengers being the 'service' within the ecosystem.

### **New Objectives:**

**New objective 1: To determine the distribution and abundance of scavengers across the North West province and determine what factors are affecting distribution patterns using GIS analysis.**

#### **Methods**

A combination of different methods will be used to provide scavenger distribution data:

- 1) **Baited camera trapping** provides presence and abundance data on vultures, brown hyaenas and jackals as well as other sympatric scavengers.
- 2) **Transects** (visual counts/scans, signs and spotlighting) can also provide presence data on all these species.
- 3) **Landowner questionnaires** have also been proved a valuable tool for assimilating distribution data on species presence.

To date we have deployed camera trapping and transects for both surveying and monitoring vultures and hyaenas/jackals. This will be continued and extended into more non-protected farmland sites. To date over 250 land owners have participated in our questionnaires, but we have only conducted detailed studies in approximately 30 locations. We will focus on areas where there are distributional gaps for further surveys and questionnaires, utilizing game auctions where appropriate, and following up questionnaires with field surveys. Our focus to date has been on carnivores, hence vulture distributional data is currently lacking. Distribution data, along with physical and biological data, will enable us to perform spatial analysis using GIS. It is hoped this will enable us to identify spatial patterns in distribution, determine core or source areas, and determine what factors are affecting distributional patterns, in order to develop habitat suitability modules where possible. Climate parameters can also be investigated, and if found to be influential to scavenger distribution, can be used to investigate distribution under future climate scenarios.

**New objective 2: Assess and compare scavenger presence, abundance, density, diet, breeding and habitat use within different levels of protection and land use.**

#### **Methods**

By use of satellite tracking and wing-tagging of vultures, we aim to follow individual vultures to determine their ranging behaviour through the year and their foraging behaviour at different times of the year. Data collected during the breeding season will identify previously unknown breeding colonies. To determine breeding success of vultures we will monitor vulture breeding colonies over three discrete breeding seasons. The number of nests, eggs, chicks and fledged juveniles will be recorded at three different times during each breeding season to give data on the productivity of each breeding colony. Observers will use telescopes at specific recording locations along sections of each colony to gather data. Counts are repeated by individual observers to confirm the 'status' of each nest. The two main cape vulture colonies to be monitored are located in the Magaliesberg area and Marakele National Park. By radio-tracking individual brown hyaenas inside and outside protected areas we can investigate their activity and home ranges and how this differs temporally and spatially in different land uses.

Camera trapping populations can also provide detailed data on individual movements and in the long term population demography. Monitoring den sites remotely by camera traps also gives insight into breeding behavior of both jackals and hyaenas. Collection of scats of hyaenas and jackals enables us to further investigate dietary niche and overlap between these species. Monitoring activity on carcasses at feeding stations (remotely and directly) will enable us to evaluate feeding behavior of multiple species and determine the biodiversity and abundance of scavengers that carcasses support.

**New objective 3: Assess the frequency and availability of carrion and other potential food items inside and outside protected areas and to evaluate the levels and types of management deployed with respect to scavengers.**

#### **Methods**

To better understand the relative use of commercial grazing land and protected areas by scavengers, we will conduct interviews with land managers in the region. This will allow us to determine the frequency and availability of carrion on their land and how frequently they encounter vultures and other scavengers (feeding directly into objective 1), which will enable us to quantify carrion availability. In addition to this, interviews will determine if and what management is undertaken by land managers that may have direct or indirect effects on scavenger populations, (e.g. predator control, carcass poisoning etc.). This will enable us to determine the extent and level of threats as well as determine the population losses as a direct result of management.

**New objective 4: To investigate the affect of mammalian community composition on dung beetle diversity.**

#### **Methods**

Dung beetles (*Coleoptera; Scarabaeidae*) are generally well recognized taxa which are frequently used to describe and monitor spatial and temporal patterns of biodiversity (Davies et al. 2001). Their diversity is closely linked to mammal diversity due to their long history of ecological specialization in feeding and breeding in dung & carrion, hence we will investigate how dung beetle diversity is related to mammal diversity, with special interest in carnivores, which are frequently under-represented in non-protected areas.

Dung beetles will be surveyed using baited pitfall traps, using a range of fresh mammal faeces as baits; including herbivores and carnivores as well as taking into account feeding guilds (omnivores, browsers, grazers etc.). Quantification of dung input and availability will also be determined by monitoring dung deposition plots in sites within known numbers of mammals. Dung beetles will be identified from a reference collection and identification books to determine community composition and abundance for different dung types.



**Volunteers making hide observations**

## **DISSEMINATION**

### **Publications:**

#### **Peer Reviewed**

- Thorn, M., Green M., Bateman, P., Cameron, E., Yarnell, R and Scott D.M. (2010) Comparative performance of spoor surveys, spotlighting, camera trapping and audio playbacks in a landscape-scale carnivore survey. *South African Journal of Wildlife Research* 40(1): 79-86.
- Thorn M., Scott, D.M., Green M., Bateman P., Cameron E. (2009) Camera Trapping as a Means of Estimating Brown Hyena Occupancy. *South African Journal of Wildlife Research* 39(1): 1-10
- Van der Merwe, I., Tambling C., Thorn, M., Scott, D., Yarnell, R., Green, M., Cameron, E. & Bateman, P. (2009) Determining diet composition and overlap of three carnivores by scat analysis. *African Zoology*. 44 (2): 288-291.

#### **Other:**

- NW Parks board **Leaflet** to promote submission of photos for ID recognition.
- **MSc Dissertation** (Nottingham Trent University): Michelle Lidson. 'The role of protected areas and apex predators in promoting biodiversity within the north-west province'.
- Teacher team featured in Earthwatch **Newsletter**.

## Visual:

- Poster for visitor's centre to publicise submission of hyaena photos.
- Multiple photos of the project are available for use.
- Publicity film available at: <http://www.earthwatch.org/europe/> - See also <http://www.youtube.com/user/EarthwatchInstitute#p/a/u/2/94HjZkdnMO0>

## Meetings and conferences:

- In January 2009 we gave a talk for the regional Northwest parks board and project collaborators to give an update on the project.
- In May 2010 attended Earthwatch open day in Oxford, UK to give project presentation.

## Educational resources:

- Lesson plans and resources, along with a kid's questionnaire created and developed by the South African teacher team.

## Other:

**Public Awareness Day** held at Pilanesberg National Park and run by Earthwatch volunteers on the August 2009 Team – general public audience.

**Community monitoring project:** Kgaswane community monitoring project in development with a member of the teacher team.



**Team 3 creating awareness**

## CAPACITY DEVELOPMENT AND EDUCATION

- Lauren Esterhuizen – £5,000 African Training Grant for continued education and working as a team leader on the project.
- Louisa Richmond-Coggan– 2<sup>nd</sup> year PhD student based in South Africa working on Brown hyaenas
- Michelle Lidson – MSc student who has undertaken fieldwork in South Africa in relation to the project.
- School teachers – Eight South African teachers undertook an expedition to the project in which they were trained in carnivore surveys.
- School children – 213 from four different schools had a day visit to the site to learn about ecology, ecosystems and conservation.



**Preparing lesson plans with the teacher team**

## **CONTRIBUTIONS TO INTERNATIONAL CONVENTIONS, AGENDAS, POLICIES, MANAGEMENT PLANS**

We applied to the Darwin Initiative for a grant in an attempt to extend the project in line with the International Convention on Biodiversity (CBD), and help South Africa achieve its five main strategic developments to meet its obligations under the CBD. Specifically, these include enhanced institutional effectiveness and efficiency, integrated management, increasing sustainability and expansion of conservation areas. Our project addresses all these areas in part through focusing on several priority actions South Africa identified in their 2009 CBD report. Although the grant application was unsuccessful, the project as it stands still contributes to these crosscutting themes including sustainable use of biodiversity, ecosystems approach, protected areas, communication and public awareness, economics and incentive measures, and monitoring and assessment.

## **CONTRIBUTIONS TO LOCAL, NATIONAL AND REGIONAL CONVENTIONS, AGENDAS, POLICIES, MANAGEMENT PLANS.**

Our data are submitted to North West parks board and Mankwe Wildlife Reserve for incorporation into their management plans. These data are also incorporated into the National Mammal GIS database for wider range management and landscape planning.

## **ACTIONS OR ACTIVITIES THAT ENHANCE NATURAL AND SOCIAL CAPITAL**

This study hopefully helps to improve **land protection** and **species management** within the NW province of South Africa and more widely across South Africa. It provides data to inform **species management** at regional and national scales and helps to inform conservation status of the focal species by providing more detailed spatial distribution data and more detailed species requirements and assessment of threats. It continues to involve local communities to increase **education and awareness** of environmental issues and ecological understanding. People involved include, scientists, land owners, land managers, conservation NGO's, local communities, school children and the wider general public. It is also hoped that, with further information, landowners may understand the economic and functional importance of scavenger species within communities.

## **LONG TERM IMPACT OF PROJECT**

### **Taxa of conservation significance enhanced, restored or maintained:**

Brown hyaenas (*Parahyena brunnae*), IUCN listed as 'Near Threatened', populations have been maintained and hopefully enhanced. Data have been used for the IUCN 2008 conservation status assessment and recent submission of new distribution maps and population assessment estimates for the region to be published (in 2010/early 2011). Information on genetics will help to enhance genetic diversity. The importance and size of the population at PNP will continue to be assessed to ensure incorporation into future management plans.

### **Habitats enhanced, restored or maintained:**

We aim to encourage maintaining natural communities within farmlands through a range of tolerance and management that encourages human-wildlife coexistence. Assessment of the issue is the first step towards understanding and helping to alleviate the problem.

**Ecosystem services enhanced, restored or maintained:**

As brown hyaenas and other carnivores are essential components of the ecosystem, maintenance of them ensures maintenance of the genetic resources they hold along with nutrient recycling and disease control as a result of their function within the ecosystem. They also enhance pest regulation as predators, and possess cultural values including ecotourism potential.

**Livelihoods enhanced, restored or maintained:**

All people (school children, school teachers, trainees, grant holders and students) involved with training and engagement on the project will hopefully benefit from the increased knowledge and awareness developed by the project to help them carry on the message for the future and for them to be inspired to invest in natural resources and sustainability.



Members of the teacher team celebrate their accomplishments on their last night in the field.