



EARTHWATCH[®] INSTITUTE

FIELD REPORT Walking with African Wildlife

Marketing title

Walking with African Wildlife

Project scientists

Dr. Dave Druce; Caiphus Khumalo

Country

South Africa

Research site / region

Hluhluwe-iMfolozi Park

Research site latitude / longitude

31° 56' 42.25" E , 28° 16' 35.06" S

Protected area status

Ezemvelo KwaZulu-Natal Wildlife game reserve

Date field report completed

12 Dec 2010

Period covered:

16 Jul 2010 to 25 Sep 2010

Report completed by

Dr. Dave Druce



Dear Volunteers,

The 2010 fielding season was a great success as a result of you volunteering your time, legs, eyes and expertise in order to complete a massive number of transects throughout Hluhluwe-iMfolozi Park (HiP). All of the transects that you walked were repeated between 15 and 20 times during the season, which resulted in 4 004.2 km of transects being walked throughout the park with 22 458 individuals being seen in 5 280 different sightings! Without you coming to HiP, we would not have been able to repeat the transects as many times as was achieved with you here. We need enough repetition of transects to have a large enough sample size to produce accurate estimates.

As well as for various research projects that are undertaken within HiP, one of the main reasons for conducting the census is to monitor long-term trends in the large herbivore population and to use the information in more effectively managing these species within a "small", enclosed protected area. During December 2010, we held the annual Animal Population Removals meeting in Hluhluwe. The aim of this meeting is to debate population estimates, assess population trends and determine offtakes of each species for the following year. As you can imagine, this is a very important meeting and requires excellent information. The park management team was very impressed with the amount of data collected during the census this year. Unfortunately, all of the species, with the exception of giraffe and white rhino, are decreasing in number. As a result, only white and black rhinos will be removed from the park next year, both as part of the ongoing provincial and national strategy to increase the distribution of these species.

In 2008, many of the large herbivore species had reached 10 year high figures, but most have now dropped to lower levels. We are not sure exactly what has caused this decrease, but some of it could be as a result of natural downward fluctuations after a peak, others could be caused by a prolonged period of below average annual rainfall and yet other decreases could be a result of extremely high numbers of predators such as wild dog and lions. For the last 3 years, wild dog numbers have been fluctuating annually between 85 and 110, and lion numbers are estimated to be in the region of 200 individuals. Wild dog numbers have never been this high before and lion numbers were this high about 10 to 15 years ago! Hopefully the leopard and cheetah census that is beginning now, as well as an intensive lion call-up phase planned for next year, will provide an indication of numbers of these species and possible impacts that they could be having on the general game species populations. As some of you would have heard while here, the spotted hyena numbers have stayed fairly constant over the past 5 years.

On a positive note, the white rhino numbers have reached the highest figures recorded in HiP since the early 1970's, despite the poaching threat that these animals face in South Africa at the moment. We conducted the aerial census of white rhino in iMfolozi in November, a little later than usual, and this gave us the distribution of white rhino in this section of the park. As a result, we've been able to put up 61 animals for removal next year, the highest number that will have been removed from HiP for a number of years. These animals will be donated to new conservation areas and/or auctioned to game reserves next year.

The data that you collected will also continue to be used in various external research projects and scientific papers which are planned for the next few years! Thanks again to all for your

assistance with this project, the results of which are used directly by the management team as well as other researchers. Thanks also for entering the data immediately after you had completed the transects. It made Geoff's job of analysing the data very easy after you had left.

The entire job was done successfully and extremely well!

Regards

A handwritten signature in black ink, appearing to read "Dave Druce". The signature is stylized with a large, circular flourish at the beginning.

Dave Druce

SECTION ONE

Non-technical overview of results

Long-term monitoring of large herbivores is vitally important in Hluhluwe-iMfolozi Park as it is relatively small and surrounded by a game-proof fence. As a result, large herbivores are unable to move out of the park during drought conditions, when faced with high predation risk or other events, as they would have 100 years ago. We, therefore, need to monitor trends in the large herbivore population as well as that of predator species in order to see if and when management intervention is necessary. HiP is managed on the principles of "process-based management" which means that one needs to understand what processes would have been present in the past, what their levels would have been and how we can simulate this in a "small", enclosed area. As a result, most processes and animals are left to regulate themselves, but where scientists and managers feel that certain animals can be removed to supplement or to seed other populations, this is done. When species with a high conservation value begin to decline, then management action is also needed to halt the decline.

In 2008, results from the game census, supported by the Earthwatch Institute, indicated that most large mammal species were at the highest levels that they had been at since the late 1990's. Although this was potentially a concern (in that certain species might compete for food resources with black rhino (*Diceros bicornis*)), scientists and managers decided not to intervene but rather to see what would happen. In 2008, the wild dog (*Lycaon pictus*) population (the second most endangered carnivore in Africa) had reached an all time high of close to 100 individuals. With the large number of impala (*Aepyceros melampus*) and nyala (*Tragelaphus angasii*), it was thought that the dogs would be able to continue to do well. This has indeed happened, with both of the herbivore populations being reduced greatly between the 2008 and the 2010 censuses. The lion (*Panthera leo*) population has also increased dramatically in this time, and with the extended dry season this year, were able to feed on numerous buffalo which had begun to not do so well because of the lack of high quality forage.

Because the methods and repetition of transects remained the same between the last number of years, we've been able to monitor the changes in the large mammal numbers accurately. We are now able to look at various factors in an attempt to determine what has caused a decrease in the herbivore population.

The white rhino population (*Ceratotherium simum*) continues to increase with an annual growth rate of 5%. As a result, we are able to remove 61 individuals next year for new conservation areas, or to increase the number of individuals on already existing game reserves. See Table 1 for trends in the number of individuals of each species counted since 2000.

Table 1. Trends in the large herbivores counted during the biannual game censuses within HiP since 2000

SPECIES	2000	2002	2004	2006	2008	2010
Blue wildebeest	3,364	3,270	2,741	3,901	4,399	3,002
Buffalo	2,865	3,430	3,553	4,072	6,082	4,789
Giraffe	657	423	613	687	793	874
Impala	24,827	23,622	18,785	18,399	23,133	14,054
Kudu	1,528	1,112	962	1,013	800	717
Nyala	9,543	7,607	5,995	5,697	6,640	4,082
Waterbuck	792	618	402	340	210	136
Warthog	4,072	3,543	2,055	1,997	2,049	1,531
White Rhino	1,687	1,802	1,476	2,090	2,038	2,312
Zebra	3,124	3,435	2,704	4,602	4,133	2,749

SECTION TWO

Objective 1: Count the large herbivore component of game in Hluhluwe-iMfolozi Park (HiP)

Progress towards/against objective 1: This was successfully completed by the volunteers, staff and students between July and September 2010. All the species that were targeted were counted, although some of the less common species were not seen often enough to be included in the analysis. After the volunteers had left, we analysed the data and produced estimates for 10 of the most common large herbivore species. This was then used to produce the Annual HiP Game Count Report.

Objective 2: use the data to establish long term trends in herbivore populations and ensure that this data is accessible to research projects.

Progress towards/against objective 2: The 2010 field season added another year of data to the growing database we have on large herbivore numbers every two years. Because of the number of years of data that we now have, we are able to determine trends in the different species numbers. Where the data indicates areas for concern for management, the necessary management actions are taken. After the results of the 2008 census, two BSc Honours projects were initiated to try to determine reasons for the decrease in the kudu and waterbuck numbers. Both students are currently completing their mini theses. Numerous other research projects request access to either the game census data or to the final estimates for their projects.

Objective 3: Do a comparative analysis of Game numbers and assemblages within HiP, compared to other similar areas

Progress towards/against objective 3: This is not being directly addressed at the moment. Currently a post-doc student has written and submitted a manuscript looking at the long term census data, trends in the population and influence of lions on certain species. Scientists and managers were concerned with the high numbers of large herbivores within HiP and wanted the above analysis done to determine whether they should be concerned with the high numbers. However, wild dogs, a critically endangered carnivore, has been doing well over the past 3 years in HiP, lion numbers and pride sizes have increased and there has been an extended period of below average annual rainfall with the result that almost all the prey species have decreased. This indicates that the system within HiP may be self regulating, but only constant monitoring of all the predator and prey species over the next few years will assist with determining this. As a result, the above analysis is not needed at the moment.

Updates to objectives

Objective 3 above is not needed any more. The reasons for this have also been detailed above. Further work in 2011 will allow us to determine if any other objectives need to be added prior to the 2012 fielding season. This can be discussed in preparation for the next fielding season in early 2012.

PARTNERSHIPS

In addition to the Earthwatch Institute supporting this project through financial support and the support of volunteers to do the actual work on the ground, the only other support that was received was from colleagues with Ezemvelo KwaZulu-Natal (KZN) Wildlife. This was through assistance with sourcing people to clear transects, supervising these people, assistance with accommodation and other logistics and provision of field rangers for escorting the volunteers. No other external organisations assisted with this project.

CONTRIBUTIONS TO CONVENTIONS, AGENDAS, POLICIES, MANAGEMENT PLANS

International

N/A

National or regional

The census results for white rhino are shared with the KZN Rhino Management Group which reports to the national body. However, the results from this study have not contributed to changing the provincial strategy.

Local

The results are also shared with the local managers, who then implement the current removal strategy based on the results. An inaccurate census of any species could result in too many individuals being removed from the population the following year, which would have a detrimental effect on the population within the park.

DISSEMINATION

Printed

In Prep. Grange, Sophie, Norman Owen-Smith, Jean-Michel Gaillard, Dave J. Druce, Mandisa Mgobozi. Changes of population trends and mortality patterns in response to the introduction of large predators: the case study of African ungulates.

Visual

2010 Game Count Figures - presented on all sightings boards (gates and camps) within Hluhluwe-iMfolozi Park.

Digital

Data is stored in a local game census database and data is also sent through to the provincial database at Queen Elizabeth Park in Pietermaritzburg.

Meetings and conferences

- 2010 - van Tonder, G.J., Perold, V., Somers, M. & Druce, D.J. The decline of the greater kudu (*Tragelaphus strepsiceros*) in the Hluhluwe-iMfolozi Park. South African Wildlife Management Association Symposium, Buffelspoort, South Africa, September. POSTER PRESENTATION
- 2010 - 2010 Hluhluwe-iMfolozi Game Count Results - Presentation to Hluhluwe-iMfolozi Local Board Meeting, 2 December. ORAL PRESENTATION

Other

Results are shared with Community Conservation Officers who undertake environmental education work in the communities surrounding HiP.

DEVELOPING ENVIRONMENTAL LEADERS

Not applicable

LONG TERM IMPACT OF PROJECT

Taxa of conservation significance enhanced, restored or maintained

Ceratotherium simum - white rhinoceros

- Globally threatened & ecologically significant
- IUCN status - Near threatened
- At last census the population within HiP was increasing slowly.
- Population size increased over the past 10 years within Hluhluwe-iMfolozi Park with a 5% per annum population increase in the last 2 years. This has enabled us to remove white rhino individuals from the park in order to seed new populations and to add to existing populations, thereby increasing the genetic diversity of these areas.

Habitats enhanced, restored or maintained

Not applicable

Ecosystem services enhanced, restored or maintained

Not applicable

Cultural heritage enhanced, restored or maintained

Not applicable

Livelihood assets enhanced, restored or maintained

48 members of the local communities directly surrounding HiP benefited from temporary work for a month when they were employed to help clear and cut the transects prior to the volunteers arriving. 5 members of the local communities were employed as cooks, cleaners and a night watchman for the duration of the project.

The Local Board, a group of people from the local communities who are elected to pass on information from the park management team to the local communities (as well as other functions), were informed of the project before it began and were also informed of the results at the end of the project.

Earthwatch Volunteers are encouraged to visit one of the schools in the local community, along with one of the permanent park staff members, while they are on the project to see how the schools work, what their needs are and to donate school equipment.

Any other actions or activities that enhance natural and social capital

Not applicable