JAMES RENNIE BEQUEST

REPORT ON EXPEDITION/PROJECT/CONFERENCE

Expedition/Project/Conference Title: Wildlife research Expedition, South Africa

Travel Dates: 1st July- 5th August 2004

Location: Edeni Game Reserve, South Africa

Group Member(s): Clare Marsden

Aims: Research assistant studying carnivore ecology.

CLARE MARSDEN: WILDLIFE RESEARCH EXPEDITION, SOUTH AFRICA.

Introduction: The Edeni Game Reserve Conservancy (EGR) is located in the bushveld of the Northern Province of South Africa and covers an area of approximately 85 km^2. The land itself was previously used in cattle rearing and therefore most predators and many herbivores had to be reintroduced to the site at its formation in 1998. Like many other small game reserves in South Africa, the wildlife populations were small, fragmented and fenced in, therefore preventing natural movements and dispersal of animals. Consequently although a small reserve could act to 'preserve' wildlife it could not conserve it.

With the aim of EGR being both eco-tourism and biodiversity conservation, the Karongwe Ecological Research Institute (KERI) was set up in 1999. In July I visited EGR for 5 weeks as a research assistant organized by Global Vision International. KERI has been intensively researching the feeding ecology, distribution, range use and intraguild competition of predators over the past 5 years. This research has been carried out to help propose the necessary management plans needed to maintain a balanced ecosystem and successfully conserve biodiversity in a small game reserve. As a research assistant, I spent 5 weeks collecting primary data within the reserve. This gave me the opportunity to work with South African scientists who have an expert knowledge of the local ecology, as well as experience of the challenges of working in a completely different environmental context.

Training: The first full week was dedicated to training me in all the necessary knowledge and skills that I would require to conduct the research. This included intensive lectures on the wildlife species and ecology, given by the researchers themselves, followed by in-depth discussions and debates about conservation management. I found this one of the most interesting aspects of my training because the opinions of many of the people at EGR were completely different to those of my lecturers in Edinburgh. Outside the lectures, practical lessons covered mammal, bird, insect, reptile and tree identification as well as tracking. Practical skills covered methods of data recording, telemetry, spotlighting, GPS, radio use and a snake handling course. Many of these skills are outside of the curriculum at University, but are an invaluable requirement for research. Considering that I intend to continue a career in research after my degree, I found that learning these gave me much appreciation of the practical requirements of field research. The final part of training concerned data input and analysis in the computer lab.

Telemetry – me searching for the elusive wild dogs

Research: 2 lions, 3 cheetah, 4 leopards, 1 wild dog, 1 hyena and 1 elephant are radio collared on the reserve. Research drives were conducted between the hours of 6am-10am, then 3pm-8.30pm daily. With the use of telemetry, all collared animals were located daily. Their locations, behaviour, full ratings and any kills were recorded. As part of this team, my research component concentrated on the wild dog population; although once these had been located twice daily I conducted other research e.g. assisting leopard observation during mating periods.

Aims of wild dog study: African wild dogs (*Lycaon pictus*) have suffered dramatic declines, primarily due to anthropogenic factors. There are now less than 2500 dogs left in the wild and less than 6 viable populations in Africa. Despite recent efforts to improve their status, wild dog conservation has been hampered by a number of misconceptions. In the wild, home ranges are often found to be in excess of 1,000 km^2, therefore reintroductions into areas smaller than this were not tried, and as a result few areas were thought potentially able to hold them. Beyond this many reserve owners did not want to hold wild dogs due to a lack of tourist demand, as well as their reputations as ruthless killers (they kill by disembowelment) that consume huge numbers of prey. Wild dogs were reintroduced onto EGR as part of new 'artificial metapopulation'. They have been studied to investigate whether it is possible to conserve wild dogs on such a small reserve, the smallest they have ever been reintroduced into.

Results of wild dog study: The reintroduction of wild dogs to the reserve has been highly successful. There have been two denning periods and a hunting success averaging at ~60%, which is comparable to larger wild areas. Despite the small size of the reserve, the dogs have only once crossed the fence line onto surrounding farmland (where they are at risk of persecution), and this occurred after the rains had washed away the fence. These findings indicate that despite having naturally large home ranges, small reserves can support small wild dog packs. At present there are only 4 males on the reserve, the 6 females having being moved earlier in the year (and successfully bonded with another male group on a different reserve) because any further increases in number would have been unsustainable on a small reserve.[1] Contrary to external predictions, the males have remained on the reserve despite removal of the females. This shows that movement of single sex groups as part of an artificial metapopulation is an effective practice.

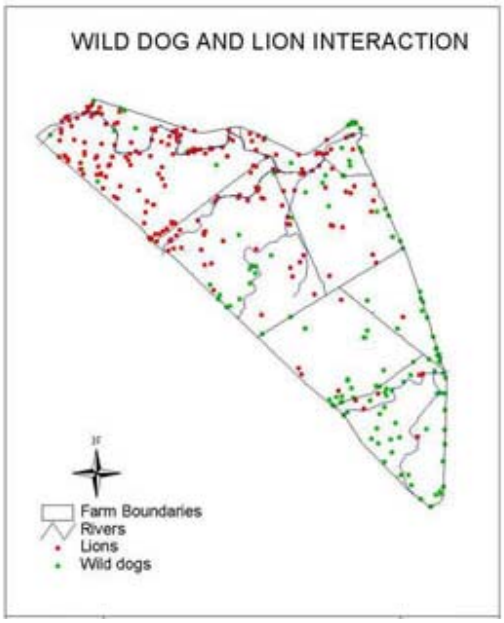
From an analysis of kill frequencies and kill biomass (over 70 days, I collected data for the last 35) of all of the predators on the reserve, it can be shown that an individual wild dogs consume less meat (kg/adult/day) than both lion and cheetah (Table 1). (Most previous 10 week data sets also show that they consume less than leopards, but the due to the death of one of the leopards, recordings of kill frequencies were low for this species.) Overall these findings are contrary to traditional opinions that they eat huge numbers of prey.

Table 1: showing a summary of consumption rates and biomass figures over a 10 week period.

SPECIES	Biomass taken off reserve (kg) during period	Total edible Biomass consumed (kg)	Group consumption rate (kg/group/day)	Individual consumption rate (kg/adult /day)	% Available biomass taken off reserve.
Leopard	537	322	4.18	1.05	0.19
Lion	3483	2090	27.14	4.52	1.25
Wild Dog	573	344	4.5	1.20	0.21
Cheetah	1096	658	8.55	2.14	0.39

Analysis of the spatial use of wild dogs has revealed interesting findings. Using the GPS coordinates of kill locations, clusters can be observed near the fence lines. This suggests that the wild dogs are using these angular human structures to funnel their prey, a previously unknown finding.

Map showing spatial distribution in of range use in EGR by wild dogs and lions.



Daily movements of the wild dogs show a natural avoidance of lions. This occurs because lions pose threats of both predation and kleptoparasitism. The inset map shows a plot of the daily movements of wild dogs (over 5 weeks) in relation to lions. It highlights that wild dogs and lions can co-exist on a small reserve, (despite ~35% pup predation) due to natural avoidance.


Wild dog, lion stand off

Conclusion: The wild dog study at Edeni, in which I took part, has so far revealed that wild dogs can successfully be conserved within small reserves. Four papers are due for completion over the next 6 months, and it is hoped that these findings will help wild dog conservation throughout Southern Africa.

Comments on the experience

[1] Using kill frequency data, meat requirements per adult, predator numbers and prey censuses, total numbers of predators that can be held on the reserve are determined. Considering the numbers of other predators, 10 adult wild dogs were considered too high for the area.

I elected to study wild dogs in Africa after researching them intensively for an elective component of one of my courses at University. After watching them in Africa I was surprised to observe and learn the extent to which the information I had read in papers contradicted with what I was seeing in EGR.

If I was to state the two most important things that I will take away from this research:
It would firstly be the appreciation of the practical aspects of wildlife research I have gained. i.e. The difficulties it entails, the patience it requires and the time that it takes.
Secondly, and perhaps more importantly, I have learned that a full appreciation of ecology, conservation or even once species can not be learned in a library, from the internet or lectures. It requires a visual dimension in the field. It is difficult to question the findings of others when you have never studied it personally yourself.

Having entered my final year, I am now considering 'life after Uni'. My trip has reiterated to me that I do want to continue into research and study a PhD. Furthermore I now hope to do this on African wild dogs. For one of my subjects this year, molecular ecology, we have been set the formal assessment of having to write a hypothetical research proposal. Having had the practical experience, I have been able to formulate one on wild dogs that is logistically possible, and I hope to use this for a basis for any PhD I apply for.

I would like to thank you for the financial support which made it possible for me to participate in this expedition. Attached is a copy of the financial breakdown and confirmation from Global Vision International of my attendance on the expedition has been submitted in hard copy.

Cost breakdown:

£1550 – Placement cost. This includes in-country training, use of equipment, internal transport, lectures, food and accommodation.
£550 – Return international flights.
£220 – Equipment costs including sleeping bag, rucksack, reading material, mosquito nets, head torch and hiking boots.
£110 – Insurance.
£80 – Vaccinations, anti-malarial drugs and medical supplies.