

## **BFA SEMINAR SERIES NO. 31**

### **Results of Hyaena Research in Hwange National Park**

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The Hyaena Research & Conservation Project began in 1999 and has always been a part of the Carnivore Research Unit, run by National Parks & Wildlife Authority (NPWA) based at Main Camp in Hwange National Park. A copy of all analysed data, regular updates and two large reports with recommendations, plus my MSc thesis (Salnicki 2004) have been given to NPWA (the thesis is in the Parks Library in Harare and is available on request by contacting the author, details below).

The spotted hyaena (*Crocuta crocuta*) is not yet endangered but is classified by IUCN (Mills & Hofer 1998) as 'threatened' and is increasingly dependent on protected areas. The total population in Zimbabwe in 1998 stood at 5600, of which around 60% was in protected conservation areas (Mills & Hofer 1998).

The Hyaena Research & Conservation Project had six major objectives for its work with the spotted hyaenas in the woodland habitat of Hwange National Park:

- To assess the population and density throughout the National Park
- To provide a variety of information on home range areas (HRA)
- To obtain data on diet and methods of obtaining prey
- To compare social behaviour in woodland habitat with other habitats
- To train NPWA staff, particularly those from the CRU
- To promote wildlife conservation through education of the local community

The main study area of 360 km<sup>2</sup> reached Hwange Safari Lodge in the north, Dopi Pan in the south, Guvalala Pan in the west and east to Makwa Pan. More than 70% of the entire park was covered when conducting the annual population calling exercises, but this was too large an area for intense HRA study.

Twelve hyaenas from four clans were radio-collared and identification of non-collared hyaenas was made by learning their unique spot pattern – over 52 hyaenas from five clans were known.

An annual population calling exercise was conducted each year from 1999-2003 using a standard methodology through playback recordings developed by Mills (1985). The density of vegetation, the availability of water and prey density from each area surveyed, was taken into account when calculating densities and estimating the population. Results showed the estimated population of spotted hyaenas in Hwange National Park ranged from 760 to 1143 hyaenas per km<sup>2</sup> (mean 957) and mean density over this same period was 0.07 hyaenas per km<sup>2</sup>. This is a low density when compared with the densities from National Parks of East Africa (Serengeti 0.80 and Masai Mara 0.60 hyaenas per km<sup>2</sup>), but similar to those found by Henschel & Skinner (1987) in Kruger National Park (0.07-0.20 per km<sup>2</sup>). With a population of around 1000 hyaenas, Hwange NP has Zimbabwe's largest sub-population. Their conservation here is therefore critical for the conservation of the species in Zimbabwe.

To estimate the population of individual hyaena clans both the Maximum Sighted Method (Kruuk 1972) and the Petersen-Lincoln Estimator were used. Both provided similar estimates. Results showed that sizes varied from 5-18 adults and sub-adults per clan.

Home range areas were calculated for four clans:

Clan Name	HRA (km <sup>2</sup> )	Period	No. of fixes	No. radio collared
HSL	32	Jan01-Aug02	40	2
Airstrip	52	Dec99-Sep00	107	2
Dopi	59	Jul01-Jan03	66	2
Nyam.	296	Mar99-Jan02	646	5

HSL = Hwange Safari Lodge; Nyam. = Nyamandhlovu

All HRAs calculated using ArcView 3.2 and based on 100% Minimum Convex Polygon.

Additional data that has been obtained from this five-year research project, but was not detailed in presentation, includes:

- Seasonal differences in HRAs
- Overlap of individual clan members HRAs
- Movement of HRAs over time
- HRAs of females pre-, during and post-lactation
- Interaction with other large carnivores and possible impact of lions (*Panthera leo*) on hyaena population
- Location and choice of den sites
- Births, deaths and dispersals
- Satellite clans
- Weights and measurements

Individual female HRAs varied from 13 to 248 km<sup>2</sup>, with an analysis of the number of fixes obtained for each female showing that between 200-250 fixes would be needed to reach an asymptote. There was no seasonal difference in the HRAs for female spotted hyaenas, but they did move their HRAs over a period of time.

Data on diet was only available through analysis of faecal samples. There are still over 300 samples to be analysed. However, from a preliminary analysis of 100 samples the top three species eaten were Zebra (18%), Duiker (8%) and Kudu (8%). Elephant hairs were found (3% of samples), but only 3% contained Impala hairs. No conclusion can be drawn from this small sample size. Scat analysis does not show gender, age or whether the prey was scavenged or killed. From observations made at the Main Camp garbage dump, no hyaenas were seen scavenging, but they did come to the butchery when fresh meat was butchered.

Thorough training of NPWA (CRU) staff was conducted throughout the five-year project. For three years Environmental Science was taught and I promoted wildlife conservation and its benefits to the children of Main Camp Primary School. A highly successful Volunteer Field Assistant project was run over three years and contributed to both data collected, the purchase of equipment for CRU Scouts, and study material for Main Camp Primary School.

## Conclusions

It is well documented that regional differences in habitat affect species' behaviour. The variations in spotted hyaena behaviour described in this study confirm that it is not sufficient to extrapolate from one habitat to another.

Results over five years from the Hyaena Research and Conservation Project in Hwange National Park have:

- Produced an estimated population based on scientific methodology
- Shown that hyaenas in Hwange NP can have extremely large home range areas
- Produced novel data on both short-term movements and clan-member overlap
- Observed new 'satellite' clan behaviour
- Found that hyaenas in Hwange NP can include unusual prey (elephant) in their diet
- Contributed to NPWA capacity building and community development, particularly with regards to wildlife conservation amongst children.

### References

- Henschel, J.R. & Skinner, J.D. (1987). Social relationships and dispersal patterns in a clan of spotted hyaenas *Crocuta crocuta* in the Kruger National Park. *South African Journal of Zoology* **22**(1): 18-24
- Kruuk, H. (1972). *The Spotted Hyaena: A Study of Predation and Social Behavior*. University of Chicago Press, Chicago.
- Mills, M.G.L. (1985). Hyaena Survey of Kruger National Park: August-October 1984. IUCN/SSC Hyaena Specialist Group Newsletter **2**: 15-25
- Mills, M.G.L. & Hofer, H. (1998). *Status Survey and Conservation Action Plan Hyaenas*. IUCN/SSC Hyaena Specialist Group, IUCN, Switzerland.
- Salnicki, J. (2004). The home range area dynamics of spotted hyaenas (*Crocuta crocuta*) in the woodland habitat of Hwange National Park, Zimbabwe. MSc thesis, Department of Biological Sciences, University of Zimbabwe.

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