KGALAGADI LION PROJECT

NEWSLETTER

Project Update

The **KGALAGADI LION PROJECT** has now been in action for ten months and we are well and truly settled in. Although we spend most nights or days working in a different part of the park with different lions, under different circumstances and there is just so much space that the park still sometimes feels like a completely unfamiliar and somewhat alien landscape. We have now covered 18 000 kilometres of driving through the park in search of lions and this is still only a snapshot of this magnificently wild place.

These months have not been without their challenges, between having to replace our research vehicle and continuously being in a state of jetlag from swopping between a nocturnal and diurnal life, regardless the project is well and truly on its way. By the time you read this newsletter we would have spent well over 100 days/nights in the field searching, tracking and most of all waiting for lions. We spend a lot of time waiting for a lion to stop doing what it seems they do best, sleeping… It is mostly when this favoured of activities ends that our work really begins and the data starts rolling in.

During our hours and days and nights under the Kalahari sun, moon and stars, we haven't just been trying to stay awake while the lions sleep. So, to give you an idea of what we have achieved thus far, we will provide you with some figures of our findings over the past ten months. This data is the crux of the project and has come to mean a lot to us as aspiring researchers and is the measuring stick we use to guide our decisions and at times, measure our success. It is this information that will ultimately be used to determine the state of the lion population.

We have now identified 144 individual lions using photographic evidence and whisker spot pattern verification derived from direct observations as well as public and staff photographic submissions. We consider this a great success but, this is still only the start. It is only now that we start seeing associations between individuals, movement patters, and birth and mortality rates. The effort it has taken to sight the now 264 individual lions over 91 sighting events can be broken down to approximately 2.56 lions sighted per observation day at an average distance of 65 kilometres travelled per lion sighted.

Spatially, the identified population are known form 27 individuals in the northern Nossob River, 40 in the southern Nossob River, 43 in the Auob River and 18 individuals from the dunes (more than 10 kilometres from the riverbeds). As has been found by previous lion research in the park and as we are starting to see, these creatures move immense distances between the riverbeds and dunes. We have followed a pride for 17 kilometres through the dunes in search of food and have followed spoor exceeding 20 kilometres of a male patrolling his territory.

With regards to the biased gender ratio of the population we are noting a bias towards males particularly in sub-adult (2-4 years old) and juvenile (1-2 years old) age classes. But, it is still early days and as you have seen, much can change as we gather more data over time.

Lion in Body Condition 1

Lion in Body Condition 3

Lion in Body Condition 5

Photo G. Ellis

Looking back at previous newsletters you may note that there has been some change in these figures mentioned above. We have been having improved success rates in terms of lions sighted per day and per kilometre. The more effort; the more data; the bigger the picture. This really is very rewarding.

Another aspect of our research is ascribing body condition indices to individuals when we see them. We may use this later to determine whether there is any relationship between body condition and the noted gender skew. We may also find whether there are seasonal changes in condition in relation to prey movement across the park and in different areas in the park. Body condition indices are ascribed on a scale of 1 to 5. For example a lion in poor body condition (e.g. ribs and backbone protruding, poor muscle tone, poor coat condition etc.) receives a score of "1" and a lion in excellent body condition receives a score of "5" (see pictures on previous page). At this point in our data collection the average lion body condition of all known individuals seems to be good (averaging 3.7). Overall lion body condition seems to vary little between the various river systems and seems to be slightly better in lions found in the dunes. The individuals observed to have a poor body condition have mostly been old lions.

Determining Lion Diet

In determining lion diet we use a combination of methods including; stable isotope analysis of lion whiskers, scat (faeces) analysis, GPS cluster analysis and direct observations. Thus far we have observed 56 lion feeding "events" between June 2013 and January 2014 using these methods. Most contributions to lion feeding events have been derived from lion scat. Thus far gemsbok has been the most commonly consumed species followed by wildebeest. Other species on the menu include steenbok, springbok, porcupine, hartebeest and even a little jackal.

Using scats (faeces) to determine the prey species consumed is the type of job one would normally turn ones nose up at, but this is a critical method in identifying lion diet. Scat analysis importantly identifies smaller prey items such as steenbok and porcupine which is typically hard to identify using one of the other observation techniques.

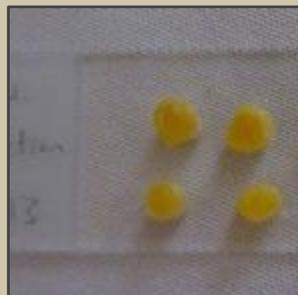Scat is collected when encountered in the field

It is soaked overnight to soften and then washed

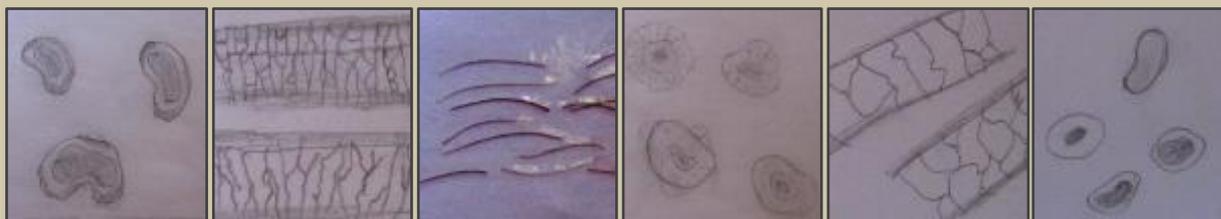A sample is taken from the scat contents and sterilized

A "strip test" is done to reveal the hairs scale pattern.

Hairs are then mounted in wax and a cross section is taken

The strip test and cross sections are observed under a microscope for identification

A reference library of the hairs of the different prey items has been created to aid identification.

Lion scat is collected when encountered from across the park and is identified using shape, diameter, colour, ingested hair and lion spoor. Collected scat is sun dried and then soaked in water overnight to soften. The scat is then washed through a sieve to collect undigested material such as hair, hoof and bone samples of the prey species consumed. Hair samples extracted from scats are assessed under a microscope and compared to a reference library of prey hair to identify the prey species consumed.

GPS fixes of lion localities from GPS/VHF collars are used to identify concentrations of GPS co-ordinates (cluster points). Where lions remain in the same place for more than four hours, at night we to these clusters of points and searched for lion scat or evidence of a kill.

The Kalahari In Bloom

The rains have brought about a transformation in the park. Flowers are blooming and the waterholes are full. There has been a noticeable movement of game from the dunes into the riverbeds where herds of game are now enjoying the fresh new growth.

Gifbol	Amaryllis	Hyacinth Family	Aandblommetjie	Dubbeltjie
Nerine laticoma	*Crinum foetidum*	*Ledebouria undulata*	*Pancratium tenuifolium*	*Tribulus zeyheri*

A Note Of Thanks

We would like to express a hart felt word of gratitude to all of our corporate sponsors and to all who support the **KGALAGADI LION PROJECT**! The success of this project relies on your good will and thus working together to ensure the survival of the lions of the Kgalagadi!

We wish to extend an immense word of gratitude to the South African National Parks KGNP Park Manager and staff for their support in conducting this research. Our gratitude must also be expressed to the SANParks Wildlife Veterinary Services and Scientific Services and collaborators for the effort and resources directed to this project, particularly so in the collaring of lions. We would also like to thank the Republic of Botswana, Ministry of Environment, Wildlife and Tourism for the permission to extend operations into the Kalahari National Park, Botswana.

This project would not be possible without the contributions in the form of bursaries from the Cape Peninsula University of Technology (CPUT) as well as support and input from the CPUT project supervisor. Thank you to the SATIB Conservation Trust as well as the Wildlife and Environment Society of South Africa for your institutional and logistical support.

The Lions

We can now identify 144 individual lions using photographic evidence and whisker spot patterns. We have noticed an increase of lion activity in the riverbeds during the hot summer months. Lions will possibly drink more frequently during summer. Much of the game has moved into the riverbeds to forage on the fresh growth. Even so, it seems as though the lions are still mostly moving into the dunes to hunt. The summer months are tough as there is limited game in the dunes and a number of lions are showing signs of a poorer body condition.

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