



Report on the progress of the Ngamo Release Pride

Progress Report
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The Ngamo Release Pride

On 1st September 2010 seven captive bred female lions were released into a semi-wild environment as part of the African Lion Rehabilitation & Release into the Wild program.

Two weeks later an adult male lion was released into the site; and since then the lions have been living as a self-sustaining pride.

The pride has been observed by a research team between one and four times per day for c. two hours per session to assess their behaviours for comparison to those of wild lions.

The pride members have proven themselves to be adept hunters taking a variety of game species and achieving an average daily meat intake akin to a wild lion pride.

A clear social structure has also been formed and indications are that this is stable with the lions behaving as would be expected.

Breeding began soon after the release of the male and in January 2011 the first cubs were born. A further litter was born in February increasing the total number of cubs born to the pride so far to five. We expect further births in June of 2011.

ALERT presents here a preliminary report on the progress of this pioneering lion pride over the seven months since their release, looking at just some of the data from the research program.

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Feeding

Lehmann *et al.* (2008), studying a single pride of lions (mean number of animals = 8) in a small reserve at Karongwe, South Africa over a period of six years found that the pride made on average 21 kills per month with the pride females killing every 1.6 – 1.7 days. Funston *et al.* (1998) gave a figure of one kill every 1.8 nights for pride females in Kruger National Park.

The pride is known to have killed 136 animals giving a kill rate of every 1.56 days. This rate can likely be explained by a higher prey encounter rate due to the size of the release area.

Impala were the preferred prey constituting 39.7% of animals killed. In Lehmann *et al.* (2008) the pride's diet constituted only 8.5% impala, although similar and smaller species made up 41% of the lions' diet; the remaining 59% coming from larger species such as kudu, waterbuck and zebra.

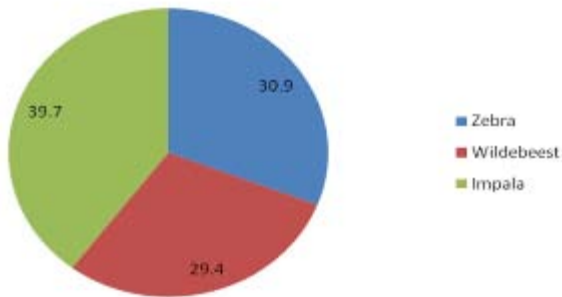


Fig 1: Percentage of each species killed by the pride

The Ngamo release pride had access to only three species although limited numbers of smaller prey such as duiker and steenbok were also present and it can be assumed that some have been killed and eaten by the pride.





The mean daily meat intake for a wild lion is highly variable; ranging from 3.0 to 14.5 kg/lion/day (see table 1).

The Ngamo release pride achieved a mean daily meat intake of 7.0 kg/lion/day although this varied month to month between 5.36 and 9.84 kg/lion/day.

Lions readily scavenge from kills of other predators and follow descending vultures to carcasses of animals that have died of natural causes. Schaller (1972) observed prides that obtained 12% of their diet through scavenging whilst others achieved 53% by such means. Due to the nature of the Ngamo release area no such opportunities are available to the lions. As such, carcasses were occasionally dropped within the site for the pride to discover. Scavenged food constituted 22.4% of the Ngamo pride’s total meat intake.

Removing scavenge feeds from the calculation for mean daily meat intake gives a figure of 5.44 kg/lion/day, well within the expected range.

Study	Location	Min	Est	Max
Druce <i>et al.</i> (2004b)	Greater Makalali Conservancy	3.0		3.2
Power (2003)	Mabula GR	4.1		4.6
Viljoen (1993)	Savuti	4.6		5.6
Schaller (1972)	Serengeti		5.0	
Bryden (1978)	Kruger NP		5.1	
Funston <i>et al.</i> (1998)	Kruger NP		5.3	
van Schalkwyk (1994)	Six reserves in South Africa	4.2	6.4	8.6
Lehmann <i>et al.</i> (2008)	Karongwe GR	6.9		12.1
Roxburgh (2008)	Tswalu Kalahari Game Reserve		9.9	
Stander (1992)	Etosha NP	8.7		14.5

Table 1: Estimated mean daily mean intake for wild lions in different parts of Africa

Kinship

Schaller (1972) observed degrees of association between pride members using the formula

$$a = \frac{2N}{n_1 + n_2}$$

where $n_1 + n_2$ represents the number of times each pair of lionesses was seen and N the number of times they were seen together. In his 1967 results the average degree of association between females of the Seronera pride lionesses was given as $a = 0.24$, range 0.00 – 0.76. A result of $a > 0.40$ was suggested as an indicator of companionship representing the highest 18% of results.

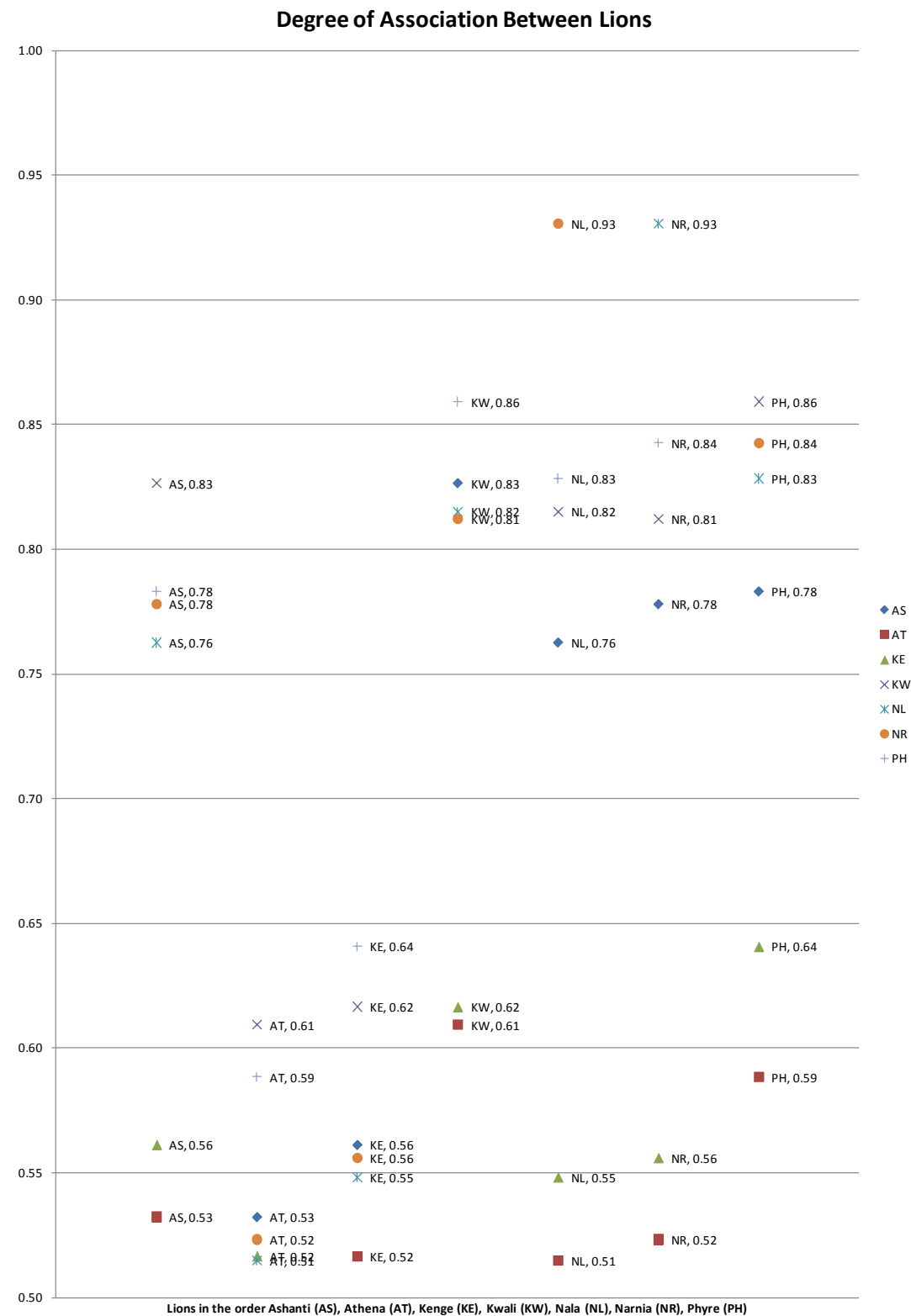
Within the Ngamo release pride the lionesses have proven to be considerably more closely associated with an average result of $a = 0.69$ range 0.51 – 0.93. It should be noted that these results are significantly affected by the solitary behaviours of both AT and KE who were denning with young cubs through much of the data collection period.

The distribution of results shows two distinct levels of association with no lion associating between $a = 0.64$ and 0.76 of the time. The highest 18% of results for this pride gives a figure of $a > 0.82$ as being an indicator of closest companionship.

	AT	KE	KW	NL	NR	PH
AS	0.532	0.561	0.826	0.763	0.778	0.783
AT		0.517	0.609	0.515	0.523	0.588
KE			0.617	0.548	0.556	0.641
KW				0.815	0.812	0.859
NL					0.930	0.828
NR						0.843

Table 2 (above) & Fig 2 (right): Degree of association between lionesses within the Ngamo pride

Prior to the departure of denning females the seven lionesses were observed together on 42.2% of research sessions.



The male was observed on his own on 35% of occasions, and with at least one female 57%. His degree of association with the females averaged $a = 0.40$ (range 0.28 – 0.48).

Of the times that the male was observed with at least one female the probability of the number of females in the group were: one lion 0.105, two lions 0.017, three lions 0.035, four 0.123, five 0.298, six 0.333 and all seven females 0.088.

To provide greater clarity to observation of kinships within the pride the nearest neighbour was recorded when members were observed. The data broadly confirms the kinships as observed in the analysis of degrees of association.

	AS	AT	KE	KW	NL	NR	PH	MI
AS		0.12	0.17	0.18	0.13	0.16	0.13	0.11
AT	0.19		0.22	0.10	0.16	0.10	0.18	0.06
KE	0.21	0.17		0.14	0.14	0.12	0.18	0.05
KW	0.20	0.11	0.15		0.15	0.15	0.20	0.04
NL	0.15	0.08	0.09	0.10		0.38	0.16	0.03
NR	0.15	0.05	0.09	0.13	0.39		0.17	0.02
PH	0.13	0.15	0.15	0.18	0.16	0.19		0.05
MI	0.32	0.11	0.12	0.10	0.12	0.07	0.16	

Table 3: Probability of each lion being the nearest neighbour of each other lion.

Activity

Schaller (1972) observed that wild lion rested 20 – 21 hours per day; around 83 – 87% of their life spent dormant.

Based on 3120 data points each behaviour observed by the Ngamo pride members were categorized as either active or inactive. The result shows that the Ngamo pride rest for 78% of the time, although large differences were observed between the activity levels of individual pride members.

The least active lions in the pride, which included the male were inactive for 83% of the observed time, whilst the most active female was inactive for a much lower 66% of the time.





Dominance

Weaker or less dominant lions tend to initiate social interactions suggesting that such action may be an appeasement function (Schaller, 1972b) and can be used therefore as an indicator of differing dominance levels with the pride.

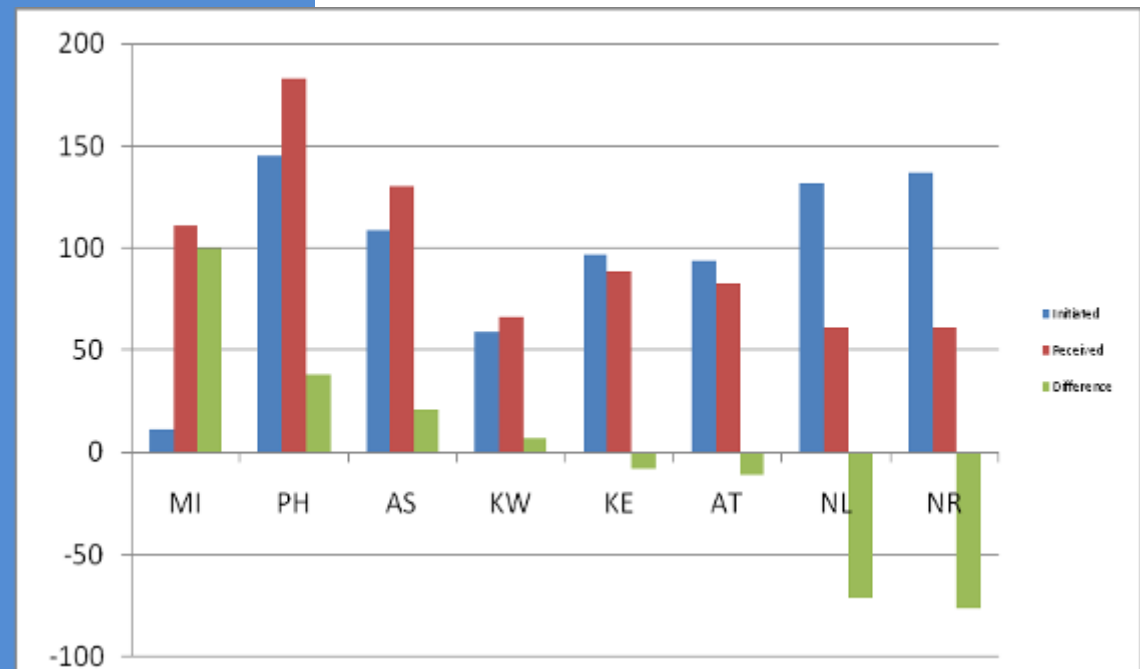


Fig 3: Analysis of the number of social interactions initiated towards other lions, the number received from others and the difference between the two; the greater difference being an indication of higher dominance within the pride structure

Reproduction

Mating took place with four females within the pride soon after the release of the male into the site.

AT and PH were both observed to leave the pride and remain in a den site, within the same area of the release area. After one week PH was observed returning to the pride and it has been assumed that cubs were born but none survived. Due to the inaccessibility of her chosen den site this cannot be confirmed. AS was mated but at no point left the pride and it is therefore concluded that she failed to conceive.

AT produced three cubs in mid January whilst KE produced two cubs in mid February. Both females remained away from the rest of the pride for the majority of the time until the cubs were c. five weeks old when they were observed with the pride more often.

Both females changed denning sites frequently and members of the pride were observed visiting these sites regularly within a few days of birth.

As AT's cubs reached seven weeks old they have been seen being led by their mother to meet up with the rest of the pride on an increasingly frequent basis although the family returns to a den, away from other members after each interaction.

Both PH and AS have been mated again and further births are expected in late June 2011.

