

Mills MGL. 1990. Lion (*Panthera leo*) and cheetah (*Acinonyx jubatus*) in Kruger National Park. Cat News:6.

Keywords: Acinonyx jubatus/cheetah/disease/fire/impala/Kruger National Park/Panthera leo/predator/prey/research/territorial behaviour

Abstract: Part of this study looks at the impact of the cheetah as a predator in the ecosystem of the Kruger National Park. They are more regular killers than lions are, but there is a lot less variability in what cheetah kill. Their top prey species, impala, makes up about 46%. Besides looking at the territorial behaviour of cheetahs at the Kruger National Park, the impact of thick bushes, fire, burning and diseases on the population was assessed.

ranch, 200 sheep are taken in a year, for example, and figures must be similar elsewhere. On the other hand, when wildlife is protected and the whole habitat protected, it is extremely important for conservation that all the small carnivores and other wildlife are protected. Therefore, we try to find ways of resolving this conflict between damage done by leopards and conservation. It seems to me that it is quite an important matter. On the other hand, of course, the leopard is one of the least endangered cats in Africa. Therefore, support for this kind of research is not forthcoming from WWF or other conservation sources. But I do think that you might give attention to this point and agree that some support could be very valuable. We want to find ways of identifying problem animals, and ways of dissuading them from taking domestic stock. I think that there may well be a lion problem also, and I think that it needs serious study. Your support for some aspect of this work, and certainly any ideas that any of you have that you would like to give me as to how pursue this would be most welcome.

Jackson: We are hoping to start a study of predation by jaguar and puma in the Venezuelan llanos. It seems to be very important to ensure that these big cats can remain in areas that are used by humans. Otherwise, they just become isolated in the reserves. At the moment, I have the feeling, from talking with people in Venezuela, that the extent of predation is probably exaggerated, and that this may apply elsewhere, but we have no hard data on it.

Lion *Panthera leo* and Cheetah *Acinonyx jubatus* in Kruger National Park, South Africa M.G.L. Mills

The research I am doing is not devoted to endangered species. Rather, we are trying to look at the position of our larger cats in the ecosystem in Kruger. The two that I have been concentrating on are lions and cheetahs. You probably see lions as important predators in an ecosystem. We are finding out the impact that predators are having on the prey as part of our management policies in Kruger. In order to find this out, I have been radio-collaring certain individuals, and then following a group of the predators for extended periods of time, 14-day periods, continuously, because we feel that this is perhaps the best way that we can get an unbiased sample of what these animals are eating. The results from some of these 14-day observation periods are rather interesting. If we take the second time that we did it, we see that in a 14-day period, a group of lions, two adults with seven 12-month-old cubs, made one significant kill, a zebra foal. That was all they consumed in a two-week period. The next month, they killed at a far greater frequency. I think a striking aspect of the study is how important this feast or famine regime is among cats, in that they can go for extended periods of time without feeding, and, at other times, they are able to take advantage when opportunities arise and gorge themselves.

The other important aspect of the study is that we have come up with the number of small animals in this area that lions are killing. In fact, 75% of their kills are impala size or smaller. Wart hogs, in particular, are an important species in terms of the impact they may be having on prey. Forty-six percent of lion kills were wart hogs. Another interesting thing is that certain prides have become porcupine specialists and are very efficient hunters of porcupines.

From the point of view of management, the two species that are perhaps the most important, as far as lion predation is concerned, are the zebra and wildebeeste. In another part of our study, we are looking at the availability of prey and the numbers of animals, and are trying to assess the impact that lions are having

on these two species. For example, if we look at zebra, we found that about 12% of the population in the study area were removed by lions during the year, against an annual recruitment rate of 17%. This suggests to us very strongly that the lions are not having a big impact on the zebra population. If we look at wildebeeste, we see that lions are removing a bigger percentage of the wildebeeste population, and may even, at this stage, be removing slightly more than recruitment. Therefore, lions are, perhaps, having an impact on the wildebeeste population. These results are just preliminary.

We are doing similar work on cheetah. We are trying to assess the impact of the cheetah as a predator in the ecosystem, and we have conducted similar two-week observation periods, during which we have followed the animals continuously. We have found, first of all, that there is a lot less variability in what the cheetahs kill. They are more regular killers than lions are. In terms of species, their top prey species, impala, makes up about 46% of cheetah kills. We were interested in a coalition of three big males that seemed to require only about one impala a week to maintain themselves. They are not at any stress at that level of intake. Occasionally the males are able to bring down something a lot bigger, such as a buffalo calf.

However, my interest in cheetah goes further in Kruger. They are a low density species, and we would like to get some idea of what factors are limiting their population. So, we are looking also at ranging patterns, reproduction and other factors. What we have found is that, as opposed to cheetahs in the Serengeti, where there is a migratory prey base, the prey base in Kruger is fairly stable. We found that, in Kruger, male and female territories are very much the same order of magnitude in size. We do not get very big female territories and the smaller male territories. Territories are overlapping and in the same area, but females are not ranging like they are in the Serengeti. One factor in Kruger is that the bushes are far thicker than in some other areas and this seems to be a factor that works against cheetah.

We manage the park by controlled burning, and we are also trying to assess the impact that fire and burning may have on cheetah populations, whether or not it helps them. We are also looking at relationships between cheetah and competitors. We found that if cheetah make kills in the early morning and late evening, or late afternoon, just before dark, then chances are very good they are going to lose their kill to hyenas. Whereas, if they make their kills in the middle of the day, which is, in fact, when they make most of their kills, they are far less likely to be disturbed.

Finally, we also try to assess the entrance of disease, particularly mange on cheetahs. We found, in preliminary results, that males, particularly those who are not able to establish territories, are far more susceptible to this disease. We have also picked up animals with mange and inoculated them to clear up the disease in order to see whether it is actually a stress situation, and whether it will reoccur. Two males that had mange were not treated. They were a control group and both died. A male we did treat, recovered and has been able to maintain a territory.

Lions *Panthera leo* in Etosha National Park, Namibia Philip Stander

Lions are definitely not endangered in Southwest Africa in Namibia. In Etosha, we have been working on determining the lion population by marking as many individuals as possible. We are using a hot brand, similar to cattle, and marking the lions with an individual mark. We also radio-collared about 16 prides. We have marked 200 individuals so far and the estimated population for the park is about 300. In Damaraland, we estimate about 50 lions