A new look at cheetahs

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Kalahari cheetahs: Adaptations to an arid region

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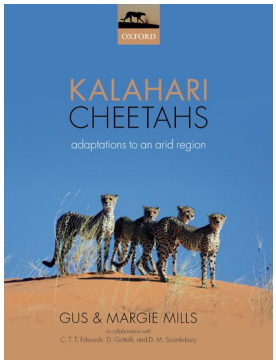

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One of the many advantages of large protected areas is that they offer the opportunity for systematic study of sparsely distributed, wide-ranging species that are fast disappearing from most other areas. The cheetah, which once occurred widely across Africa, the Middle East and Asia, is one such species. Just about all that is known of the ecology of this iconic species comes from studies in two areas – Tanzania's Serengeti National Park and ranching areas in Namibia. The three million hectare Kgalagadi Transfrontier Park, shared between South Africa and Botswana, supports a healthy population of cheetahs, which coexist alongside a host of other large predators (lions, leopards and hyaenas) in a relatively arid region, offering the opportunity to gain new insights into the ecology, behaviour and survival of cheetahs.

There is arguably no one better qualified to conduct such a study than Gus and Margie Mills. In 1972, as newlyweds, the couple arrived in the Kalahari to spend a couple of years studying the little-known brown hyaena. They ended up spending 12 years in the area – a tale entertainingly recounted in a popular book of their adventures.[1] During this time, Gus also produced an authoritative and unique account of the comparative behavioural ecology of both brown and spotted hyaenas.[2] After completing his work in the Kalahari, Gus moved on to the Kruger National Park where he studied the ecology and conservation of wild dogs and lions. During a career as a research scientist that lasted until 2006, he established himself as a world leader in the field of carnivore ecology and conservation. Following 'retirement' from the South African National Parks, the intrepid couple returned to the Kalahari where – with funding from the Lewis Foundation and other sources – they were able to study the ecology of cheetahs for 6 years.

The authors used a combination of good, old-fashioned field observation (over 7000 hours in total, assisted by San trackers) and modern technology to reveal the fascinating lives of these top carnivores. For example, daily energy expenditure was measured using doubly labelled water; tri-axial accelerometers, GPS loggers and drop-off radio collars were used to apportion different energy costs to different behaviours; and DNA studies were used to track paternity and genetic relationships between individuals. The emergence of affordable digital photography allowed the authors to harness the collective observational capacity of hundreds of tourists. By inviting them to submit photographs of cheetahs, they obtained over 1200 batches of photographs, allowing Margie to identify 216 individual cheetahs over 7 years. All of this work has confirmed the status of the cheetah as a sprinting specialist, but it has also revealed important differences between the Kalahari and the better-known Serengeti cheetahs, and provided new insights that have wider implications for conservation.

This book reveals, once again, that the widely held view that the lion is the only social cat is incorrect. Male cheetahs often range alone, but are just as likely to team up in duos or trios. These male coalitions are not necessarily only between siblings, and the coalition males weighed more than single males as they are able to bring down larger prey, and thus eat more. Coalitions, however, do not necessarily confer an evolutionary advantage. Female cheetahs mate with several male individuals, both singleton and coalition males, and litters of cubs typically have more than one father. In the Serengeti, only 5% of cubs survived to adolescence, and many were killed by lions or hyaenas, whereas a third of cubs survived in the Kalahari. Although some were killed by larger predators, it seems possible that many were killed by smaller predators, such as ratels or jackals. The Kalahari cheetahs' main prey was the steenbok, followed by the springbok, with gemsbok, ostrich and even eland calves, as well as hares and the strictly nocturnal springhare forming part of their diet. Cheetahs in the Kalahari live for about 7 years, after which they are either killed (sometimes by other cheetahs), or succumb to starvation.

The book concludes by examining the pressing question of cheetah conservation. Prior understanding was based on the view that cheetahs require vast areas to maintain viable populations, both because they were thought to be limited by competition from other large predators, and because of a lack of genetic variability which placed smaller populations at undue risk. Consequently, international cheetah conservation efforts were focused on maintaining populations outside of protected areas. The Kalahari study has revealed that this view does not necessarily hold. Cheetahs were found not to be at undue risk from other predators, and their genetic makeup has not placed them at any disadvantage – in fact, cheetahs that were re-introduced to protected areas much smaller than the Kgalagadi have thrived. As conservation funds are limited, the authors argue that conservation efforts should focus on maintaining or improving the integrity of protected areas rather than trying to conserve cheetahs in unprotected areas.

I found this book extremely interesting, loaded as it is with facts and illustrations about the diet, hunting behaviour, breeding and survival of cheetahs. The authors have made a valuable contribution to our understanding of the behaviour and survival of a top predator, and in so doing have joined an elite band of eminent authors in this field, including George Schaller, Hans Kruuk and Jane and Hugo van Lawick-Goodall. The book should find wide appeal amongst scientists, conservation practitioners and wildlife enthusiasts, especially those who visit the extremely popular Kalahari in ever-increasing numbers.

References

1. Mills G, Mills M. Hyena nights and Kalahari days. Johannesburg: Jacana; 2010.
2. Mills MGL. Kalahari hyaenas: The comparative behavioural ecology of two species. London: Unwin Hyman; 1990.