

Role reversal: record of cheetah (*Acinonyx jubatus*) kleptoparasitizing a kill from a spotted hyaena (*Crocuta crocuta*)

Femke Broekhuis^{1,2*}, Onesmus Irungu³

¹ Mara Cheetah Project, Kenya Wildlife Trust, Nairobi, Kenya,

femke@maracheetahs.org

² Wildlife Conservation Research Unit, Department of Zoology, University of Oxford,

Recanati-Kaplan Centre, Tubney, UK

³ Asilia Kenya, Nairobi, Kenya, onessman@gmail.com

* Corresponding author: Femke Broekhuis – femke@maracheetahs.org

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Introduction

Members of a carnivore guild influence each other indirectly through resource competition and directly through interactions such as intraguild predation and kleptoparasitism. Kleptoparasitism refers to the parasitic theft of a resource, which in the case of carnivores is captured prey (Case and Gilpin, 1974). Individuals are more likely to kleptoparasitize when the net energetic benefit is higher than that of hunting live prey, particularly when the individual that is being stolen from is weaker and the chances of successful kleptoparasitism are higher (Creel, 2001). The individual stolen from is negatively impacted by kleptoparasitism, not only because a direct encounter can result in injury, but also because they have to expend additional energy to compensate for the loss, thereby increasing foraging costs (Gorman et al., 1998).

Cheetahs (*Acinonyx jubatus*), for example, can be negatively influenced through kleptoparasitism by larger predators such as lions (*Panthera leo*) and spotted hyaenas (*Crocuta crocuta* Hunter et al., 2007). Due to the cheetahs' comparatively smaller body size and predominately solitary nature, cheetahs rarely defend their kills against kleptoparasitism (Caro, 1994). In the Serengeti National Park, Tanzania, cheetahs lose up to 12.9% of their kills of which 78% are taken by spotted hyaenas and 15% by lions (Hunter et al. 2007b). Similarly, 12% of cheetah kills are stolen in Kruger National Park, South Africa (Mills et al., 2004). Cheetahs on the other hand are not known to steal kills from other predators, but recently the roles were reversed in the Maasai Mara, Kenya.

Material and Methods

The sighting occurred at 07h42 on the 23rd October 2015 in the Maasai Mara National Reserve situated in the South-west of Kenya. All observations were made from a stationary Toyota Landcruiser at a distance of 30m. All cheetahs were identified by the Mara Cheetah Project according to their unique spot pattern (Caro and Durant, 1991). The date of birth of cubs was backdated based on the age when they were first seen. In this case, the cubs were estimated to be

around 15 months old as they were first sighted in their lair at the beginning of July 2014 when they were approximately three weeks old.

Results and Discussion

A single spotted hyaena was seen hunting and killing an adult topi (*Damaliscus lunatus jimela*; Fig 1). Within 15 minutes an adult female cheetah with three 15 month old cubs (one female and two males) were seen approaching the hyaena and its kill. The cubs initiated chasing the hyaena off the kill before returning to feed on the carcass (Figs 2 and 3). The cheetahs finished feeding, undisturbed, two hours later when they were satiated.

Cheetahs do not commonly scavenge and only two reported cases of cheetahs scavenging could be found: in the Serengeti, Tanzania (Caro, 1982) and in Etosha National Park, Namibia (Stander, 1990). However, in both these cases the cheetahs found a carcass where there were no other predators present and therefore they did not have to chase away a predator before scavenging. In the case reported here, the female cheetah and her cubs actively chased a spotted hyaena from its kill. To the authors' knowledge this is the first published record of cheetah actively stealing, or kleptoparasitizing, a kill from another predator.

It is inherently risky for a cheetah, especially one with cubs, to interact with larger predators such as spotted hyaenas as spotted hyaenas are known to kill both cheetah cubs and adults (Laurenson, 1994, Caro, 1994). In the case reported here the female was accompanied by three big cubs and in the cases of the Serengeti National Park and Etosha National Park the individuals were, respectively, accompanied by two and six big cubs (This report, Caro, 1982, Stander, 1990). On average cheetahs hunt more than once a day but hunts are not always successful (Hilborn et al., 2012) or when they are, they can be stolen by scavengers (Hunter et al., 2007). A mother with (big) cubs will have to hunt more frequently to meet the energetic requirements of the cubs. It is therefore possible that in order to meet these energetic requirements that individuals with cubs are more likely to scavenge

and, in the case reported here, to actively steal a kill from a larger predator by chasing it away. An adult female cheetah weighs on average 35.9 ± 5.3 kg (mean \pm SD) and in this case the 15 month old cubs were approximately the same size as their mother (Caro, 1994). A cheetah is considerably smaller than an adult spotted hyaena which can weigh anywhere between 45kg and 82.5 kg (Macdonald, 2001), but in this case the spotted hyaena was outnumbered. Similar cases have been recorded between spotted hyaenas and lions where spotted hyaenas can easily chase female lions and sub adults off a kill as long as there are four times as many spotted hyaenas (Cooper, 1991).

Spotted hyaenas and lions are often held responsible for the decline in cheetah populations, this is partly because these predators not only kill cheetahs but they also steal their kills. Apart from the risk of injury it was previously thought that kleptoparasitism has a significant impact on cheetah survival as cheetahs struggle to balance their energetic budget when kills are stolen. However, a recent study has shown that high speed hunts only make up fraction of a cheetahs' daily energy budget and that cheetahs can easily cope with a kleptoparasitism rate of 25% (Scantlebury et al., 2014). Additionally, the current record shows that cheetahs have other means of obtaining food, including scavenging from other predators, illustrating that cheetahs are more flexible in their behaviour than was previously thought.

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111 **Figures**



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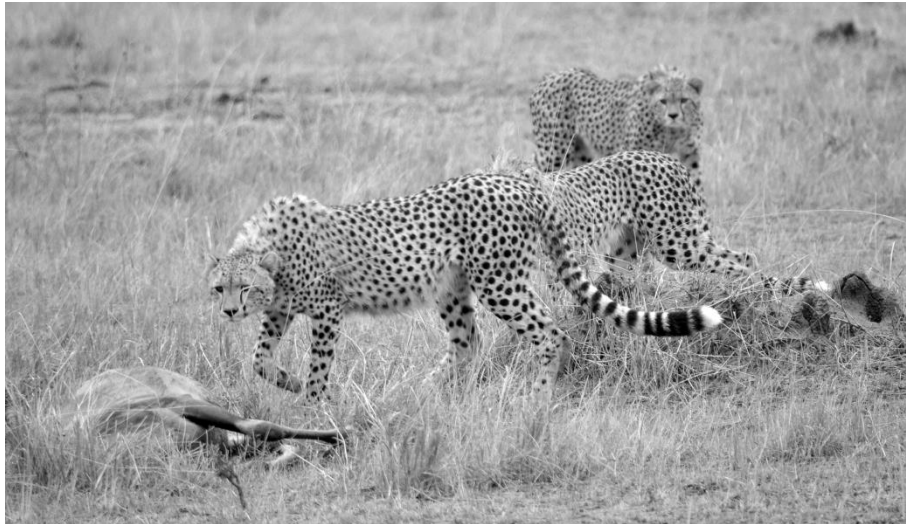
Fig 1 A spotted hyaena killing a topi in the Maasai Mara, Kenya



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Fig 2 A female cheetah with three cubs chasing away a spotted hyaena from its kill



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117 **Fig 3** After having chased the spotted hyaena from its kill, the cheetahs returning to feed on the topi