

Biting the hand that feeds you: Attacks by captive carnivores cause deaths and injuries in South Africa

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INTRODUCTION

South Africa has substantial and growing populations of captive large carnivores with about 7979 captive lions (*Panthera leo*) (Creedy, 2019) and 600 captive cheetahs (*Acinonyx jubatus*) (Van der Merwe *et al.*, 2016) as well as other big cats like tigers (*Panthera tigris*). No conservation planning processes have identified captive breeding as a requirement for the conservation of these species in the wild (Funston & Levendal, 2015; Miller *et al.*, 2016; Van der Merwe *et al.*, 2016) and it is widely recognized that captive-bred animals are not necessary or even appropriate for species restoration (Hunter *et al.*, 2013). For many of these facilities, income is derived from captive wildlife tourism (Moorhouse, D'Cruze & Macdonald, 2017) in the form of visiting facilities, touch and interaction programmes, as well as voluntourism (Coals *et al.*, 2019). A substantial commodity chain for the commercial trade in lions has been identified with three distinct sectors currently involved, namely the captive trophy hunting industry, non-consumptive tourism and volunteering sector, and the international trade of lion bones to Southeast Asia for the traditional medicine industry, with the potential for lions to move between these sectors (Green, Jakins, de Waal & D'Cruze, 2021).

Wildlife tourism has a huge potential to benefit local livelihoods, create jobs, build awareness and promote conservation; however, there can also be negative welfare and conservation impacts (Moorhouse *et al.*, 2015), particularly around captive wildlife. There are several well-documented

concerns about the captive carnivore industry in South Africa including issues such as: welfare of the animals held within this industry (Green *et al.*, 2022; Wilson & Phillips, 2021), transfer of zoonotic diseases (Green *et al.*, 2020), hunting of captive lions and the resulting impact on wild lion populations (Lindsey, Balme, Midlane, Alexander & Craig, 2012), laundering of wild cheetahs through captive facilities (SANBI, 2019), management and implications of trade in lion parts (Williams, Loveridge, Newton & Macdonald, 2017) and potential reputational damage to Brand South Africa (Harvey, 2020). However, little attention has been given to aspects of human safety in captive wildlife facilities.

In South Africa, there is no legal requirement for holding any kind of qualification before being permitted to own or work with captive large carnivores (Wilson & Phillips, 2021). There is no legislation governing how staff and tourists interact with captive predators to ensure the safety of both animals and humans and there are no national norms and standards or industry best practice protocols to ensure safe interactions (SATSA, 2019). In contrast, to conduct walking safaris with tourists in Big 5 wildlife areas, a Professional Trails Guide Certificate is required, which is obtained through the Field Guides Association of Southern Africa (FGASA) and accredited by the Tourism and Hospitality and Sport Education Training Authority (CATHSSETA). This certificate involves intensive training, including 600 hours of experience, 300 Big 5 dangerous game encounters, advanced rifle handling skills and first aid qualifications (FGASA, 2019).

In the wild, animals pose very little threat to tourists and hence deaths and injuries are uncommon and usually related to human error (Durrheim & Leggat, 1999). However, attacks on people by captive wild animals, particularly large carnivores, are becoming more prevalent and concerning. Unlike domesticated pets that have lived in close alliance with humans for thousands of years, no matter whether large carnivores have been hand-raised and habituated, they remain wild with strong prey-drive and territorial instincts (Shepherd, Mills, & Shoff, 2014). Media reports frequently capture information on captive large carnivores attacking people, and with the advent of social media, these have become more accessible in recent years. Given that there is no legal requirement to report attacks of captive carnivores to authorities in South Africa, media and informal reports are currently the most reliable sources of information.

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Here we aim to quantify the extent of attacks on humans, the conditions under which these attacks occur and the outcome of the attacks to highlight the lack of regulation in this sector and to contribute to the knowledge base for guiding responsible and ethical wildlife tourism in South Africa and for staff and volunteers who may consider working at captive facilities.

MATERIAL AND METHODS

We conducted a systematic review using the Google search engine. A total of six search terms relating to captive carnivore attacks were used including ‘South Africa’ AND ‘lion’ OR ‘cheetah’ OR ‘tiger’ OR ‘captive carnivore attack’ OR ‘carnivore attack’ and searches were limited to English and Afrikaans languages. Webpage hits were examined for applicability and included only if they related to captive carnivores and South Africa. If articles mentioned other attacks, these were recorded and any links to other incidents examined and captured where relevant to this study, similar to snowball sampling (Maree, 2016). Results were limited to news and social media reports as no peer-reviewed literature on the subject was found.

We extracted information from these reports on the facility and provincial location at which the attack occurred, the large carnivore species responsible for the attack (lion, cheetah, tiger), the age (adult, child) and sex (male, female) of the victim, the situation in which the attack occurred

(inside the enclosure, through a fence, in/on a vehicle, due to an escaped carnivore, other) and the outcome of the attack (victim injured or killed). We also recorded whether the victim was a tourist/visitor, staff member or the owner of the facility.

We recognize the weaknesses in our data including, but not limited to, the data source being biased towards reported incidents and many incidents likely to go unreported; reports being more available in recent years due to social media; and reports likely being biased towards incidents that involve tourists rather than staff and owners of facilities. There are no data available on how many captive carnivores there are in South Africa or on visitation volumes to facilities or the number of staff at facilities. Due to these limitations we limit our analyses to descriptive statistics.

RESULTS

We recorded a total of 52 incidents of captive cheetahs, lions and tigers attacking a total of 58 people (31% of victims were fatally attacked and 69% were injured) between 1996 and 2020 (Fig. 1). The discrepancy between the number of attacks and number of victims is due to multiple victims being involved in some attacks. The age of the victims, species responsible for the attacks, location of the attacks and association of the victim (tourist, staff or owner) are presented in Table 1. Lions were responsible for the most attacks (68%; $n = 40$) and nearly all fatalities (94%; $n = 17$),

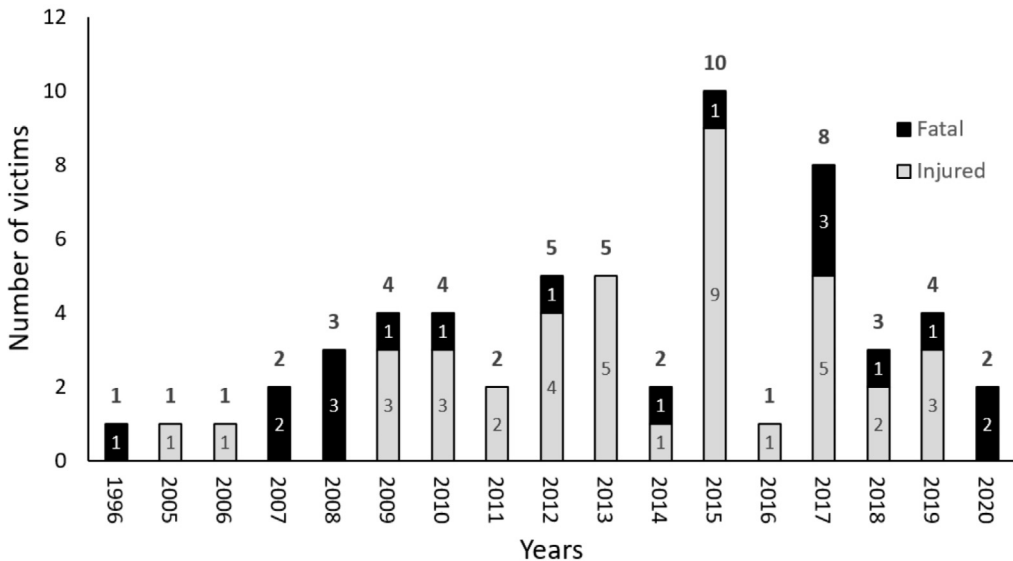


Fig. 1. Attacks of captive carnivores on people and the outcome for the victim as recorded from online sources including news and social media pages in South Africa from 1996 to 2020.

Table 1. Outcomes of attacks of captive large carnivores on people in South Africa recorded from online sources, including news and social media pages, from 1996 to 2020. Numbers represent the count values, percentages summed vertically are expressed in brackets, percentages summed horizontally are underlined, while overall attack category percentages are expressed in bold.

Attack category	Victim outcome	Lion	Large carnivore involved	Tiger	Subtotal	Total
Victim age group	Adult	18; (55%); <u>62%</u> 15; (45%); <u>100%</u> 33; (100%); <u>75%</u>	9; (100%); <u>31%</u> 0; (0%); <u>0%</u> 9; (100%); <u>20%</u>	2; (100%); <u>7%</u> 0; (0%); <u>0%</u> 2; (100%); <u>5%</u>	29; (66%); <u>100%</u> 15; (34%); <u>100%</u> 44; (100%); <u>100%</u>	44; 76%
	Child	5; (71%); <u>46%</u> 2; (29%); <u>67%</u> 7; (100%); <u>50%</u>	4; (80%); <u>36%</u> 1; (20%); <u>33%</u> 5; (100%); <u>36%</u>	2; (100%); <u>18%</u> 0; (0%); <u>0%</u> 2; (100%); <u>14%</u>	11; (79%); <u>100%</u> 3; (21%); <u>100%</u> 14; (100%); <u>100%</u>	14; 24%
	Total/age group	23; (57%); <u>57%</u> 17; (43%); <u>94%</u> 40; (100%); <u>68%</u>	13; (93%); <u>33%</u> 1; (7%); <u>6%</u> 14; (100%); <u>24%</u>	4; (100%); <u>10%</u> 0; (0%); <u>0%</u> 4; (100%); <u>8%</u>	40; (69%); <u>100%</u> 18; (31%); <u>100%</u> 58; (100%); <u>100%</u>	58; 100%
Location	Inside enclosure	12; (57%); <u>50%</u> 9; (43%); <u>100%</u> 21; (100%); <u>64%</u>	10; (100%); <u>42%</u> 0; (0%); <u>0%</u> 10; (100%); <u>30%</u>	2; (100%); <u>8%</u> 0; (0%); <u>0%</u> 2; (100%); <u>6%</u>	24; (73%); <u>100%</u> 9; (27%); <u>100%</u> 33; (100%); <u>100%</u>	33; 57%
	Through fence ¹	6; (86%); <u>75%</u> 1; (14%); <u>100%</u> 7; (100%); <u>78%</u>	1; (100%); <u>12.5%</u> 0; (0%); <u>0%</u> 1; (100%); <u>11%</u>	1; (100%); <u>12.5%</u> 0; (0%); <u>0%</u> 1; (100%); <u>11%</u>	8; (89%); <u>100%</u> 1; (11%); <u>100%</u> 9; (100%); <u>100%</u>	9; 15%
	Inside/on vehicle ²	5; (71%); <u>100%</u> 2; (29%); <u>100%</u> 7; (100%); <u>100%</u>	0; (0%); <u>0%</u> 0; (0%); <u>0%</u> 0; (0%); <u>0%</u>	0; (0%); <u>0%</u> 0; (0%); <u>0%</u> 0; (0%); <u>0%</u>	5; (71%); <u>100%</u> 2; (29%); <u>100%</u> 7; (100%); <u>100%</u>	7; 12%
Escaped carnivore	Injured	0; (0%); <u>0%</u> 2; (100%); <u>67%</u> 2; (100%); <u>50%</u>	0; (0%); <u>0%</u> 1; (100%); <u>33%</u> 1; (100%); <u>25%</u>	1; (100%); <u>100%</u> 0; (0%); <u>0%</u> 1; (100%); <u>25%</u>	1; (25%); <u>100%</u> 3; (75%); <u>100%</u> 4; (100%); <u>100%</u>	4; 7%
	Other ³	0; (0%); <u>0%</u> 3; (100%); <u>100%</u> 3; (100%); <u>60%</u>	2; (100%); <u>100%</u> 0; (0%); <u>0%</u> 2; (100%); <u>40%</u>	0; (0%); <u>0%</u> 0; (0%); <u>0%</u> 0; (0%); <u>0%</u>	2; (40%); <u>100%</u> 3; (60%); <u>100%</u> 5; (100%); <u>100%</u>	5; 9%
	Total/location	40; (100%); <u>69%</u>	14; (100%); <u>24%</u>	4; (100%); <u>7%</u>	58; (100%); <u>100%</u>	58; 100%

Continued on p. 24

attacks mostly occurred while victims were inside the enclosures with the animals (58%; $n = 33$) and visitors were the victims in the most attacks (66% of attacks, $n = 33$). All results are presented in Table 1.

Attacks were recorded in 34 known facilities and three attacks occurred in facilities that were not identifiable, and most facilities experienced a single incident (71%; $n = 25$), however 10 facilities had more than one incident with one facility responsible for eight incidents resulting in six injuries and two deaths (Fig. 2).

DISCUSSION

There are no accurate data available on how many facilities exist in South Africa that have captive large carnivores and are open to the public. The most recent published estimate is 53 facilities with captive carnivores that generate some income from tourism (Williams & 't Sas-Rolfes, 2019), however, one unpublished assessment of captive facilities lists 74 facilities with lions, cheetahs or tigers in South Africa (WildChoices, 2022). There are no data available on the number of domestic and international visitors that interact with captive carnivores in South Africa or the number of staff that work with these animals. There is an anticipated association between the number of attacks and the number of interactions, however we were unable to measure this or measure the risk level to either facility staff or visitors. For example, there are more reports of visitors being attacked than staff, with staff likely being under-reported in this study, but no doubt interact more with the animals due to the nature of their work and are thus at higher risk than visitors. Staff at captive wildlife facilities should have no need to be in an enclosure at the same time as the carnivores, provided that the enclosure design makes allowances for a feeding and management section that can be separated from the main camp. The incidents of owners being attacked show that knowing the animals or having experience handling them is insufficient to prevent attacks and even death. Incidents related to staff and owners are likely under-reported in the media and warrant further investigation.

The fact that a number of facilities experienced repeat attacks shows that either measures are not put in place to prevent further attacks or that such health and safety protocols are insufficient. We are unaware of any legal action taken subsequent to any of these predator attacks and have also not

noted any facilities that have permanently closed after such attacks. We are only aware of one facility that stopped physical (touching / petting) interactions with cheetahs to protect their visitors (News 24, 2017), however, visitors are still allowed to enter their cheetah camps.

Captive carnivores clearly present dangers to those interacting with them, but attacks are preventable through diligent management of the animals and tourists, as well as appropriate camp design. Tourists and staff should never be able to enter camps with large carnivores and there should be no opportunity for anyone to interact with captive large carnivores even through a fence, as this was the second most common location for attacks (16% of recorded attacks), when the person was trying to touch the animal or the animal was able to reach its paw through the fence and grab the person. A secondary boundary/buffer fence of at least 1 m high and at a distance of 1.5 m from the enclosure fence should be erected, where the public has access to enclosures to completely separate visitors from the animals.

Several calls have been made by various conservation organizations for government and the tourism industry to regulate interactions with predators (*e.g.* Conservation Action Trust, 2018; Endangered Wildlife Trust, 2019; outcomes of a parliamentary Colloquium on Captive Lion Breeding for Hunting (Portfolio Committee on Environmental Affairs, 2018); and recommendations from a Ministerial High Level Panel (High Level Panel Report, 2020)). In a webinar on 5 December 2016, the then CEO of South African Tourism, Sisa Ntshona, stated that 'South African Tourism does not promote or endorse any interaction with wild animals such as the petting of wild cats, interacting with elephants and walking with lions, cheetahs and so on' (SA Tourism, 2016). Despite such efforts, these activities remain unregulated.

In 2019, the Southern Africa Tourism Services Association (SATSA) developed a Captive Wildlife Attractions and Activities Decision Tool (SATSA, 2019) to empower tourists to make more responsible choices. The tool guides users through a decision-making tree to come to an outcome of 'support', 'support with caution', or 'avoid' for any captive wildlife facility that is open to the public. In 2022, 224 captive wildlife facilities in South Africa were evaluated against the SATSA Captive Wildlife Attractions and Activities Decision Tool, and 64% of facilities were categorized as 'avoid' ($n =$

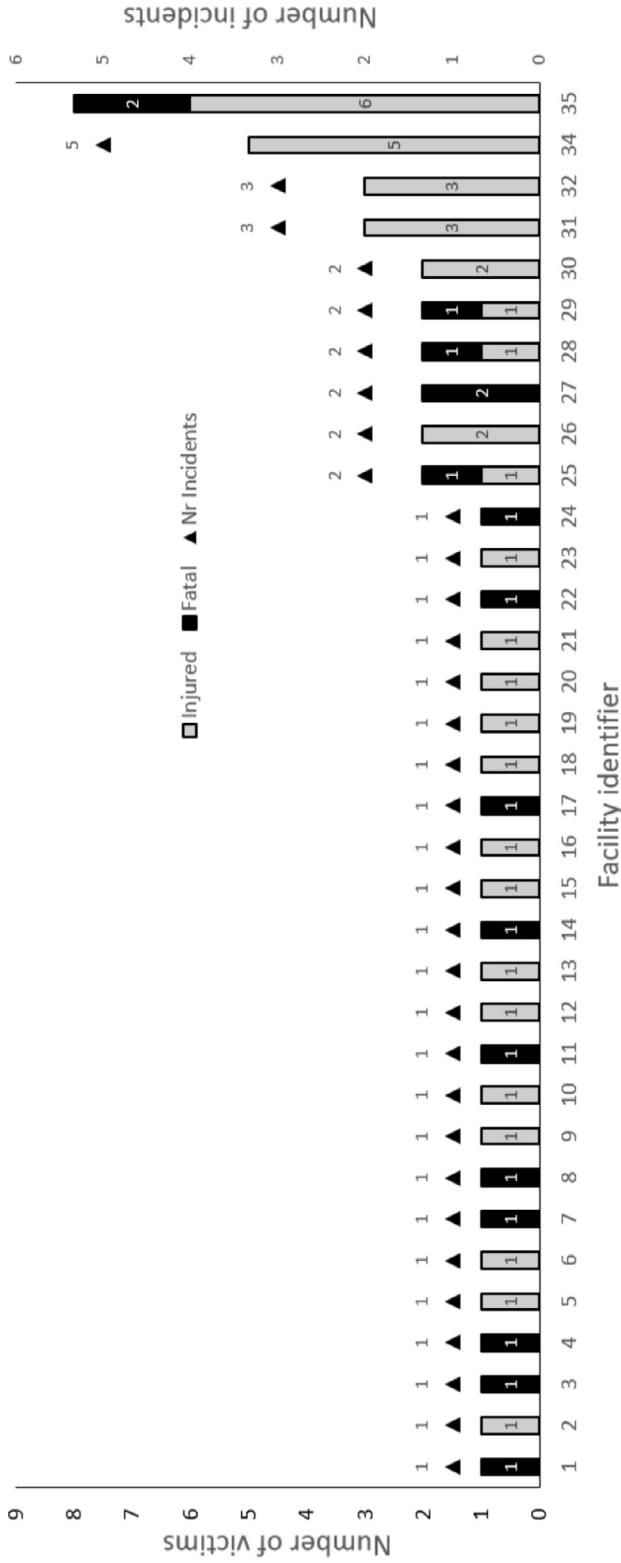


Fig. 2. Attacks of captive carnivores expressed as the number of incidents per facility (black triangles) and the outcome for the victim (grey bars = injured; black bars = fatal) as recorded from online sources including news and social media pages in South Africa from 1996 to 2020.

143), 20% were 'support with caution' ($n = 44$) and only 17% classified as 'support' ($n = 37$) (Wild-Choices, 2022). Thus, overall facilities in South Africa remain problematic.

CONCLUSION

We recorded 58 victims of captive carnivore attacks in South Africa, although many attacks have most likely gone unreported. Of these victims, 18 lost their lives as a result of the attacks and the remainder were wounded with some seriously injured. Interacting with captive large carnivores poses safety threats and in the absence of legislation in South Africa there are no regulations to protect the safety of tourists, staff and owners, who work and come in contact with captive carnivores. Thus, the onus currently lies on the visitors and staff to ensure their own safety.

We recommend that people who work at facilities (including voluntourists) investigate the working conditions thoroughly before taking up any form of work and that tertiary education institutions are diligent in determining threats to students, who may be attempting to gain work experience at captive facilities. If people need to be in the enclosure with the carnivores at any stage, the work opportunity should be re-evaluated.

In the absence of legislation to protect tourists, we recommend that tourists never enter an enclosure with captive carnivores and do not engage in any activity that involves physically touching a large carnivore. We encourage travel agents and tour operators to not book visits to such facilities in the interest of the safety of their clients and their business reputation. Tourism ventures that focus on the conservation of large carnivores in the wild and where field guides are highly trained and regulated should be given preference and be supported instead. This approach ensures not only the safety of tourists and staff, but also negates issues around the welfare and trade-related concerns involving captive carnivores, and promotes ethical wildlife tourism that directly benefits conservation of the species in the wild.

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Author contributions

Conceptualization, K.M. and L.d.W.; methodology, K.M. and L.d.W.; formal analysis, K.M.; investigation, K.M. and L.d.W.; data curation, L.d.W.; writing

– original draft preparation, K.M.; writing – review & editing, L.d.W.; visualization, K.M. and L.d.W.

Conflicts of interest

Nothing to declare

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