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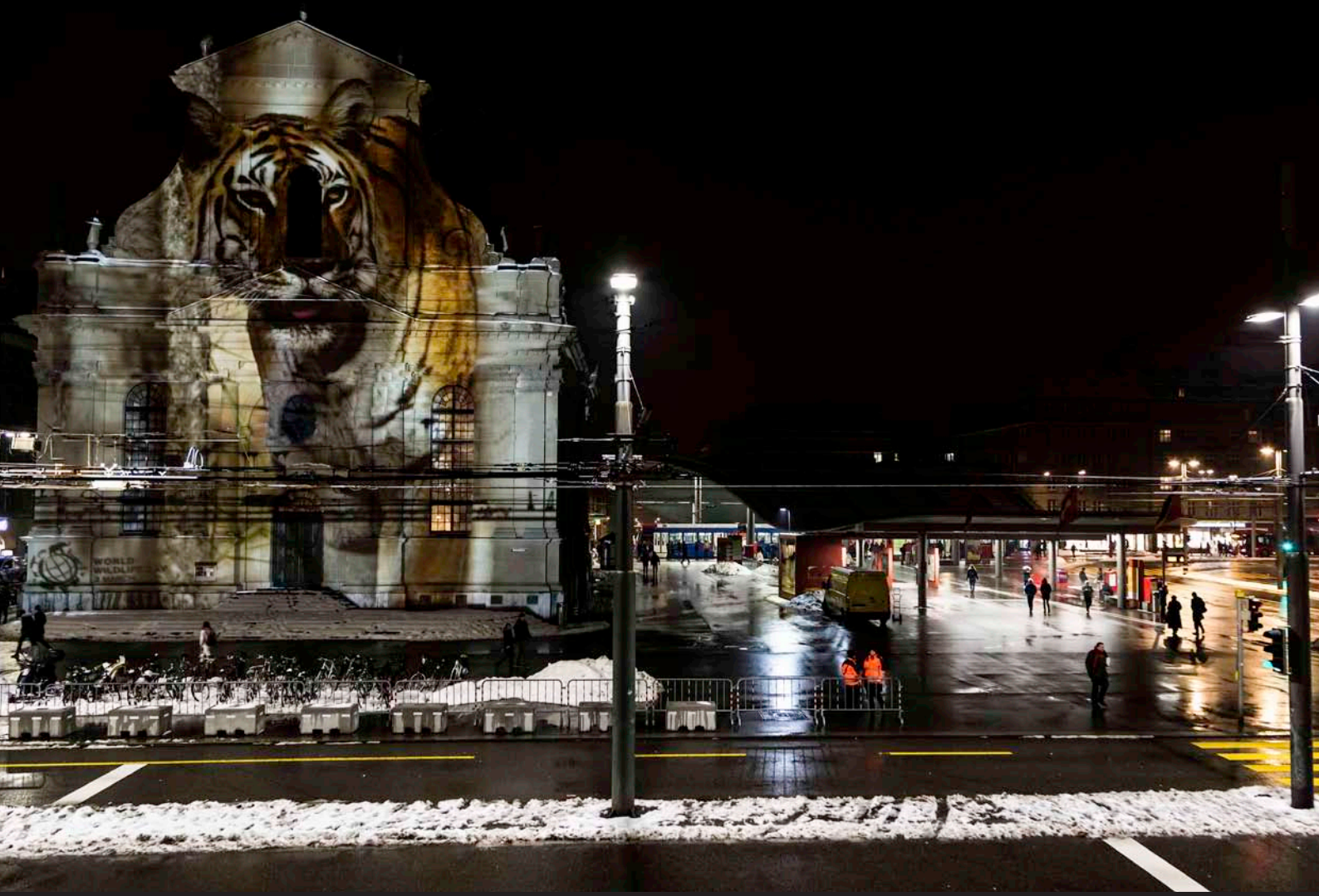
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This Cat News Special Issue is dedicated to the memory of

Bradnee Chambers

1966–2019

Executive Secretary of CMS

02



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Cover Photo: Tiger in Bern
Photo Malini Pittet



LUKE HUNTER

Priorities for conserving the African lion



Luke Hunter obtained his PhD on lion and cheetah population recovery from the University of Pretoria in 1998. He subsequently headed the Wildlife Conservation Society's Great Cats Program. Since 2008, Luke has been the President and Chief Conservation Officer of Panthera where he oversees the planning and execution of field programmes around the globe, and supervises the scientific priorities of Panthera's work. He has written extensively about wild cats and their conservation, publishing 8 books and more than 175 articles in scientific journals and popular media.

The liability of sociality

The lion is famously the only felid that forms large, permanent social groups, centred on a matriline comprising up to 20 (but typically 3–6) related lionesses that communally defend a territory and raise cubs. Each pride usually has a coalition of 1–9 (generally 2–4) adult males that typically immigrate from other prides and are unrelated to the breeding females. This sociality produces an enduring pride structure that, in exceptional circumstances, may number up to 50 members including cubs.

From a purely scientific perspective, the lion's social system is a valuable asset for researchers interested in the intersection between behaviour and ecology; many elegant and fascinating papers have been written on the social lion, and indeed the species is one of the most studied of all Carnivora. Yet from the conservationist's perspective, the social lifestyle of the lion represents a uniquely vexing challenge. More so than any other carnivore species on earth, the lion is dependent on abundant, medium-to-large bodied herbivores. Compounding this requirement, the species is now almost entirely restricted to woodland-savannah habitats in Africa (a single population of lions lives outside Africa, in India's Gujarat State); the same habitats host a human population that is both the fastest-growing and most heavily reliant on livestock of any continent's. This combination of biological and human factors unite to make the lion an especially problematic species to conserve in the 21st Century.

Is the lion Vulnerable or Endangered?

Lions have declined for the same reasons that have provoked declines of large carnivores everywhere in which, historically, the conversion of habitat to support human populations has been the primary driver. Loss of habitat continues to be an underlying threat to lions, although there is now broad consensus that two additional threats are chiefly responsible for ongoing declines:

1. Indiscriminate anthropogenic persecution i.e. retaliatory and pre-emptive killing to protect human life and especially livestock. In general, this threat is most prevalent outside protected areas and especially on their boundaries where pastoralist communities are often concentrated. Although lions are protected throughout their range, enforcement against illegal killing by pastoralists is largely non-existent in most range states.
2. Depletion of the lion's wild prey base. Based on a questionnaire of practitioners associated with 186 protected areas, prey base depletion due to bushmeat poaching is regarded as the most serious threat to lions in protected areas across Africa. Bushmeat poaching contributes to low conservation effectiveness of a majority of parks with lions; less than one third of protected areas sampled for the study conserve lions at $\geq 50\%$ of their estimated carrying capacity, and around 42% of protected areas conserve lion prey species at $\geq 50\%$ of their estimated carrying capacity.

Although the lion reaches high densities in well-protected productive habitat, the species has undergone a massive range collapse. In Africa, it occurs unequivocally in only $< 8\%$ of its original range; including poorly-known

areas where its continued presence is uncertain, the most optimistic estimate is that it may occur in 16.3% of historic range.

The total population of the species is estimated to have declined 43% between 1993 and 2014, but this conceals a more severe decline across most of the range. Five countries (Botswana, India, Namibia, South Africa and Zimbabwe) comprising around 25% of the total population have stable/nearly stable or increasing populations which are collectively estimated to have increased 12% since 1993. These increases in a relatively small part of the range disguise the severity of the decline elsewhere in the African range, representing 75% of the population: this decline is collectively estimated at 60% since 1993. Accordingly, although the lion is classified as Vulnerable on the IUCN Red List, it qualifies to be considered Endangered in most of its range (by the A2 criterion, with an inferred rate of decline over 50% in three generations).

Two main priorities for conserving the lion

Securing protected areas and reducing conflict-related killings are recognised as the two most impactful priorities in reversing the decline of lion populations. A wide variety of additional activities have a role to play in fostering recovery, chief among them, addressing unsustainable trophy hunting practises in countries where lion hunting is legal. However, such ancillary interventions may fail or at best produce only very modest conservation outcomes unless the pervasive illegal killing of lions and their prey is addressed on a large spatial scale.

Resolving retaliatory killing

Of the many activities engaged in by conservationists focused on lions, resolving conflict between livestock owners and lions has received the greatest attention by the non-profit sector. While the scope of interventions varies with the cultural context, all projects include the improvement of night corrals as a mainstay. Variations on this theme include reinforcing existing corrals with locally-available Acacia thorn-trees (e.g. Lion Guardians, Kenya), creating impenetrable 'living fences' of cultivated species such as *Commiphora africana* (Niassa Carnivore Project, Mozambique; African People and Wildlife Fund, Tanzania) or building entirely new corrals with modern materials such as Eucalyptus poles and chain-link fencing (Kwando Carnivore Project/Panthera, Namibia). These improve-

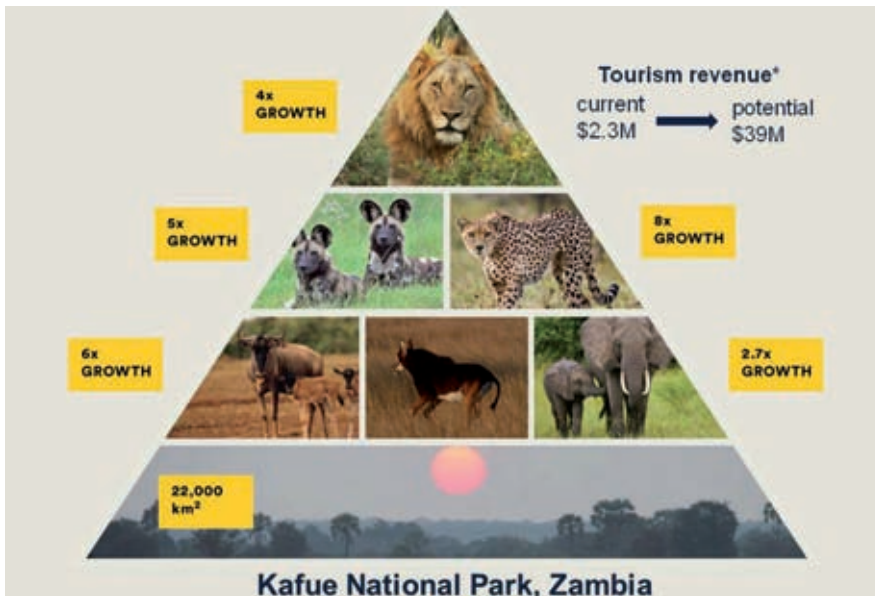


Fig 1. The ecological and economic potential of parks. The estimates for growth show the approximate increases in respective wildlife populations of Kafue NP, Zambia, if the park’s potential carrying capacity was realised. The main limitation to that recovery is currently wide-spread poaching of ungulates and carnivores, including lions, inside the national park. *Tourism revenue estimates from Martin 2011 (Report to ZAWA, Lusaka).

ments must be associated with diligent herding practises that ensure livestock is corralled at night; and they further rely on livestock owners being able to respond rapidly when lions (or other carnivores) appear at corrals as, left alone, lions will eventually find their way into even the most robust corrals.

Provided these criteria are met, enclosures are one of the most effective mechanisms to reduce predation by lions (this applies widely to other carnivores around the world). Where applied in concert with ongoing education and support (for example, in employing community members to maintain corrals, accompany livestock and monitor lions), the conservation outcomes are convincing. In northern Namibia’s Zambezi region, lions killed 135 livestock in 2013 in communal lands near Nkasa Rupara National Park, and at least 21 lions were killed by people in retaliation. Between 2014 and 2016, the Kwando Carnivore Project and Panthera built 71 large corrals with communities in the most afflicted regions, reducing both the number of livestock killed at night by lions, and the number of lions killed by people to zero in 2016.

Importantly, enclosures are not a universal panacea, for example, in much of West and Central Africa where semi-nomadic herding practises preclude their effectiveness, at least seasonally. Additionally the issue of day-time predation while livestock is out in the field

grazing remains a challenge everywhere that lions occur in pastoral landscapes. Promising field trials with mobile corrals made of canvas currently underway in Namibia and Zimbabwe may help to resolve both issues (see softfootalliance.org/mobile-boma/).

Securing protected areas

All remaining lion populations occur only in protected areas PAs or are associated with PAs areas yet the effectiveness of African PAs is undermined by very significant funding deficits. It has been recently calculated that the minimum funding required for the effective conservation of African lions is a total of \$1.2–2.4 billion annually for the 282 PAs included in the study. However, those PAs receive only \$ 381 million annually, leading to a deficits totalling \$ 0.9–2.1 billion. 88–94% of all PAs with lions are currently regarded as insufficiently funded.

The relatively recent emergence of long-term partnerships between conservation NGOs and African statutory wildlife authorities is helping to address this shortfall. Such public-private partnerships PPPs are focused on improving the overall management capacity of protected areas and take a variety of forms in which improving park security and curtailing illegal hunting is typically a high priority. Historically, these partnerships are not especially focused on individual species such as lions nor have they been a priority

for lion-focused conservationists. However, numerous examples of parks where PPPs are being implemented have produced notable recoveries of wildlife including actual or potential recovery of lions. Prominent examples include Gonarezhou (Zimbabwe), Yankari (Nigeria) and Zakouma (Chad) achieved via partnerships between those countries’ wildlife authorities and NGOs such as Frankfurt Zoological Society, the Wildlife Conservation Society and African Parks respectively.

PPPs represent an important opportunity for the lion-conservation community. Lion status is a useful proxy for overall health of PAs, and the species acts as an iconic umbrella for attracting investment that, when properly directed, has benefits that go well beyond stabilising or increasing lion numbers. Panthera works in Kafue NP in Zambia with the Department of National Parks and Wildlife (DNPW; formerly ZAWA) where wildlife populations are significantly depleted as a result of pervasive bushmeat hunting. Addressing that issue by supplementing the anti-poaching capacity of DNPW personnel would produce significant recoveries in wildlife populations across the board (Fig 1). Additionally, if Kafue’s wildlife populations were at capacity, their tourism potential has been estimated at almost 20 times their current value, USD\$39M compared to \$2M. Well-managed protected areas can act as massive engines for both ecological and economic recovery but the wildlife populations of many of them are rapidly approaching the point at which those dual opportunities will be permanently lost.

Conclusion

The recent decline of the lion is one of the most rapid and thoroughly documented of all carnivore species. The pattern of decline continues in the majority of the species’ range, and will inevitably lead to further losses in range and population without determined conservation action on a very large spatial scale. Although the obstacles to success cannot be trivialised, there is broad consensus on the most important threats to the species and the principal solutions as outlined here. With the apparent recent escalation of a targeted international trade in lion parts, the urgent need for these actions will only increase.

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