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Cover art by Megha Vishwanath

African lions have been wiped out from 80% of their historic range and continue to decline at an alarming rate due to retaliatory killings, loss of habitat and prey species, exploitation by recreational trophy hunters and commercial trade and disease. This special issue of Current Conservation focuses on conservation issues and the effective management of lions across some important lion habitats. Philipp Henschel and Luke Hunter of Panthera Foundation present the case of critically endangered lions of West and Central Africa. Through their article, they emphasise the need for assessing population trends, threat status and safeguarding these genetically distinct African lion populations. The remarkable efforts of Ewaso lions speaks of a very positive approach to human-lion coexistence by empowering local communities. Shivani Bhalla and Heather Gurd describe their efforts and success in making the indigenous Samburu people the ambassadors and guardians of their own natural heritage.

Whereas conservation programmes are mostly run by the State or conservation NGOs, ALERT encourages volunteers to be a part of lion conservation, research and community development programmes. Simon OChen a “nomadic adventurer” writes about his experience as a volunteer and the delight of working with lion cubs as part of a project to strengthen wild populations through release of captive raised lions in Zambia. This approach represents a new direction and a much debated conservation model. Scientists Matt Hayward and Michael Somers have long time experience in carnivore reintroductions in South Africa and have written extensively about the reintroduction of top-order predators. They describe how South Africa leads the world in large-scale biodiversity restoration with lions at the forefront and how translocations may serve as an effective and powerful conservation strategy. Set against the context of these conservation and management approaches, I present my perspective on the future of Asiatic lions.

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Into the wild

Zambezi River, Zambia

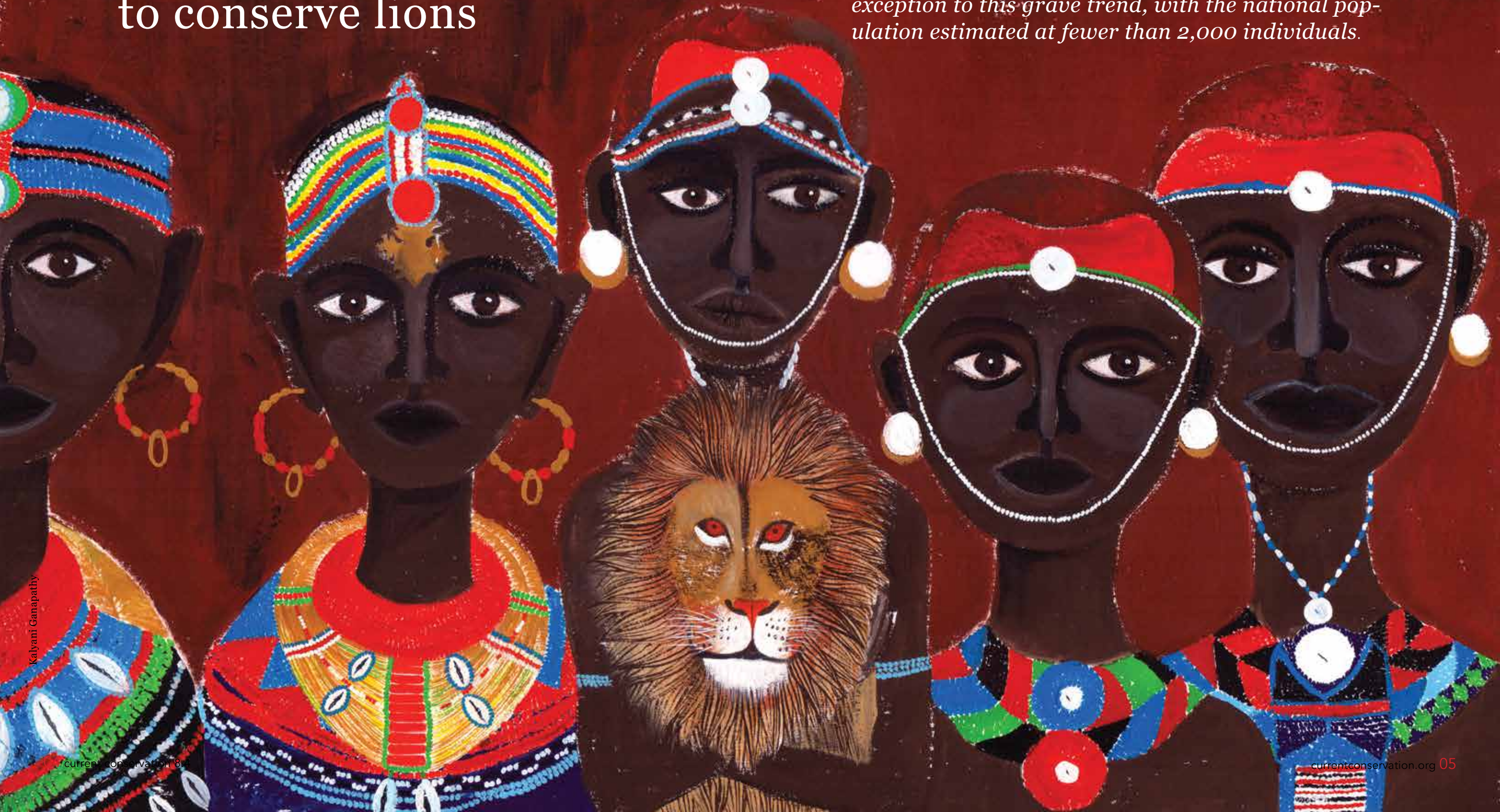


Simon OChen

Walking the cubs along the Zambezi River in the Mosi Oa Tunya National Park, Zambia. It gets the cubs used to being in the wild encountering wildlife such as elephants, giraffes, gazelle and buffalo.

Empowering local communities in Kenya to conserve lions

The African lion is a powerful flagship species synonymous with African rangelands; yet across the continent, lions and other great carnivores are disappearing at an unprecedented rate. Kenya is no exception to this grave trend, with the national population estimated at fewer than 2,000 individuals.



Here, like elsewhere in Africa, habitat loss and conflict with people rank amongst the most significant of threats to lions. Rapid human population growth and encroachment into wildlife habitat have increased the incidence of human-lion interaction and conflict over recent decades. Conflicts, which can culminate in retaliatory persecution of lions, are often most pronounced amongst pastoralist communities for whom livestock depredation presents a significant actual—as well as perceived—risk to people’s livelihoods.

With anthropogenic threats central to the decline of the African lion, and with over 65% of lion range outside of formal protection (www.panthera.org), many believe that the success of carnivore conservation hinges on the involvement of local people. This is reflective of a broader shift in the conservation paradigm, where historical, largely top-down approaches that once disenfranchised local communities have been replaced by more integrated solutions that recognise local needs and empower communities to manage their natural resources

and become more effective stewards of their environment.

In the Greater Ewaso Nyiro ecosystem of northern Kenya, the conservation organisation Ewaso Lions is working with Samburu communities, a semi-nomadic pastoralist ethnic group, to develop creative solutions to conserve lions and mitigate human-carnivore conflict. In this article, we present examples from Ewaso Lions’ portfolio of outreach activities, which are purposefully rooted in traditional cultural practices and are designed to build capacity and harness local expertise.

Warrior Watch

Morans, the warrior age-class of the Samburu tribe, traditionally play a central role in protecting their communities and livestock from external threats, including predation by lions and other large carnivores. Yet, these young men represent one of the most neglected groups in conservation management and decision-making in northern

Kenya. Recognising this gap, Ewaso Lions Field and Community Manager and Samburu moran, Jeneria Lekilelei, came up with the idea for the Warrior Watch programme. Being a moran himself, he realised that his age-class could potentially be the best ambassadors for conservation as they spend most of their time in wilderness areas. Jeneria described how “Warriors are the eyes and ears in the bush and involving them is key to the conservation and security of [my] region’s wildlife and people”. Launched in 2010, Warrior Watch therefore encourages morans to become active wildlife ambassadors and to improve community awareness and tolerance for lions and other carnivores.

“Warriors are the eyes and ears in the bush and involving them is key to the conservation and security of [my] region’s wildlife and people”

The programme intentionally builds on morans’ traditional protection role by increasing their capacity to mitigate human-carnivore conflict. Morans reinforce livestock enclosures, teach herders good husbandry and communicate the message about the value of lions to their peers. Equally, through the incorporation of a participatory monitoring scheme, Warrior Watch leverages morans’ wide-ranging presence in wildlife areas to monitor threatened species and record conflict incidents, ensuring the collection of information that is critical to successful conservation monitoring and research over a far greater geographical scale than could be achieved by Ewaso Lions’ staff alone. To fulfill their role, Warrior Watch participants receive ongoing training in wildlife ecology and conservation, conflict mitigation techniques and basic data collection (including the use of GPS devices). Although provided with small food stipends, it is education which forms the principal incentive for participation, with many of these

formerly non-literate morans now able to read and write and, vitally, to complete their own wildlife monitoring and conflict reports.

Despite the programme targeting only a small sub-section of the population (15 morans across 3 conservancies) and offering negligible financial rewards, an evaluation conducted in 2012 revealed how Warrior Watch had already gained widespread community support and significantly influenced local attitudes towards, and tolerance of, predators within the two year period following its launch. As so few morans are directly engaged in the programme, effective dissemination has been critical to this success, with participants sharing their knowledge and skills widely amongst other morans and members of their community.

The evaluation further revealed how Warrior Watch has been instrumental in empowering the moran demographic both politically (by increasing participation in conservation and associated decision-making) and socially (by enhancing respect for morans and building social capital). This empowerment, coupled with an increased understanding of the importance of carnivores and knowledge of wildlife-friendly conflict reduction strategies, is believed to have galvanised community support in the absence of significant monetary incentives. Although a formal evaluation of the ecological impacts of Warrior Watch has not been undertaken, in 2013 alone, Warrior Watch morans prevented lions from being killed on eight separate occasions, emphasising the conservation potential of this programme.

Wazee Watch

Samburu wazee (elders) are respected leaders who, in contrast to the moran demographic, are traditionally recognised as central decision-makers with great capacity to influence change within their communities. Accordingly, the practices and decisions made by the wazee have a greater likelihood of being adopted than those enacted by other groups.

Despite the Warrior Watch programme’s success in mitigating incidents of human-carnivore conflict, limited communication across the wazee and



Nashipai in Samburu

Ewaso Lions

moran demographics has hindered effective collaboration between the two groups. Jeneria, recognising this shortfall, felt that engaging the elders would be critical to continued conservation success within the area. Wazee Watch was, therefore, launched in July 2013 to capitalise on elders' influence within communities and to provide a platform for intergenerational discussions about wildlife. Ewaso Lions meets with the eight wazee every two months to discuss challenges in conservation and often to seek assistance from the elders in various forums, related to security or conservation. The wazee also strive to reinforce the conservation message, representing Ewaso Lions at community meetings and supporting Warrior Watch morans in their efforts to diffuse potential conflict situations and to educate the community on the importance of carnivores. Consequently, the programme has the potential to further increase social capital, as warriors and elders unite to achieve this shared conservation goal.

Mama Simba

As is common amongst pastoralist communities, gender roles within Samburu society are strongly marked, with women typically assuming responsibility for the household and not participating in decision-making at the community level. By virtue of their role fetching firewood and water, building and maintaining the homestead (manyatta) and tending to livestock (especially goats), they are central users and managers of natural resources and also frequently come into contact with wildlife. Moreover, whilst elders and warriors are away with cattle, especially during the dry season, women often remain within the village. Consequently, they must deal with human-carnivore conflict first-hand should a predator attack livestock inside their village at night. Yet, Samburu women—like morans—have rarely been actively included in conservation activities in northern Kenya.

The Mama Simba ('mother of lions') programme was launched in September 2013 within Westgate Community Conservancy to harness women's enthusiasm to participate in conservation and to fulfill their requests for education. Mama Simba equips women, who have limited exposure to conservation issues, with the knowledge and skills



Mama Simba ladies during conservation training

Ewaso Lions

needed to reduce their environmental impact, effectively conserve wildlife and ultimately improve livelihoods.

Acquiring literacy not only facilitates their participation in conservation-based activities but also empowers women in other aspects of their life, including their beadwork, food and livestock trade businesses. Anecdotal evidence further suggests that the women feel a strong sense of ownership and pride in the work they do as part of the Mama Simba programme and are now afforded a greater say within their communities.

Firstly, the programme delivers workshops informing women of the importance of conservation and sustainable practices and offers hands-on training in the identification of wildlife (including identification of carnivore tracks). Secondly, as part of a wider initiative entitled Boma Watch, it works with women to enhance livestock protection within the manyatta, encouraging reinforcement of livestock enclosure (bomas) with thornbush to restrict entry by carnivores, and enlisting their support to test and monitor experimental deterrents, such as 'Lion lights'. Thirdly, the programme offers an alternative source of income, by commissioning the women—renowned for their exceptional beadwork skills—to make authentic beaded lion figurines. Ewaso Lions purchases these handicrafts directly from the women who make them, before selling them at international forums.

Finally, through Mama Simba's educational arm, the programme teaches women to read and write. Acquiring literacy not only facilitates their participation in conservation-based activities but also empowers women in other aspects of their life,

including their beadwork, food and livestock trade businesses. Anecdotal evidence further suggests that the women feel a strong sense of ownership and pride in the work they do as part of the Mama Simba programme and are now afforded a greater say within their communities. It is anticipated that the Mama Simba programme will be evaluated in the future using an evaluation toolkit created for the project.

Lion Kids Camp

Despite living in close proximity to world famous National Parks and Reserves, children in rural Kenya are rarely afforded the opportunity to observe wildlife at close range and to experience what attracts numerous tourists to their country each year. Instead, children's perceptions of wildlife are shaped by largely negative interactions: for example, an elephant chasing a woman as she fetches firewood, a donkey mauled by hyaenas, or the remains of a camel following an attack by lions. Since attitudes formed early in life tend to persist, environmental education aimed at children has



Children during the Lion Kids Camp in Samburu see their first ever lion.

Ewaso Lions

great potential for fostering values and behaviours that support long-term conservation objectives and the development of a new generation of wildlife ambassadors.

The Lion Kids Camp is a four-day residential camp hosted by Ewaso Lions in collaboration with The Safari Collection tourist company. After securing their place in the camp through a creative arts competition, children from local primary schools are taken on game drives and bird walks, shown how to use binoculars and cameras; they listen to lectures from local conservation groups and perform in a wildlife conservation-themed drama competition.

An independent evaluation found that the inaugural Lion Kids Camp had not only provided children with a positive and enjoyable experience of wildlife but had significantly improved children's knowledge of wildlife and conservation issues, the greatest change observed in those children with a lower baseline level of environmental education. Encouragingly, in the questionnaire surveys that followed the camp, all the children agreed that they would be sad if there were no lions in Samburu. Using the results of the evaluation, subsequent camps will continue to nurture our future rangers, wardens, tour guides and field officers.

Lion Watch

Lions and other large carnivores are a major lure to tourists, with thousands of visitors heading to the National Reserves and Community Conservancies which comprises Ewaso Lions study area each year. In order to better engage the tourism industry in lion conservation and effectively exploit the knowledge and presence of safari guides and their clients, Ewaso Lions launched its citizen science project, Lion Watch, in April 2013.

Through Lion Watch, 20 professional guides and rangers, the majority of whom hail from local communities, have received advanced training in the identification and ecology of the region's lion population and learnt how to monitor the species using identification cards, aging books and a specially designed smartphone app. The programme thus serves a dual function: firstly, it

greatly increases the spatial scale of lion monitoring as guides record lion sightings during game drives and secondly, it promotes a richer tourism experience for visitors, who are also encouraged to upload their own photos to an online database. To date, more than 500 lion sightings have been recorded by guides within Samburu and Isiolo Counties, with this vital data contributing to evidence-based conservation decision-making.

Conclusion

Ultimately, Ewaso Lions believes that by integrating decisions and information from the local people who share the landscape with lions into conservation, we are better equipped to understand and conserve the lion population. As our programmes illustrate, current knowledge of lion conflict and movement on the ground can lead to effective community owned solutions to human-



Jeneria Lekilelei – Samburu warrior, Ewaso Lions Field Manager and Founder of the Warrior Watch programme

carnivore conflict. In addition, our programmes support the idea that local incentives for conservation are multi-dimensional and the success of community-based conservation need not necessarily rely upon financial instruments. Instead, our approach recognises the importance of political and social benefits in the form of increased equity and empowerment and encourages local ownership of wildlife conservation practices. We firmly believe that this approach has helped galvanise community support for conservation and, in turn, ensured that the lion population within our study area is now stable and has increased to its highest number in a dozen years.

Ewaso Lions believes that by integrating decisions and information from the local people who share the landscape with lions into conservation, we are better equipped to understand and conserve the lion population. As our programmes illustrate, current knowledge of lion conflict and movement on the ground can lead to effective community owned solutions to human-carnivore conflict.

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Translocations in South Africa: lion reintroductions in perspective



INTRODUCTION

Biodiversity conservation seems to progress along a trajectory over time and economic development from gazetted isolated protected areas (often paper parks), to intensively managing those areas, to linking them via corridors, and finally to restoring those areas to some preconceived benchmark. Here, we describe this transition in South Africa and show how it now leads the world in large-scale, biodiversity restoration, with lions (*Panthera leo*) at the forefront.

Although southern Africa is considered the cradle of humankind by many, it was not until a few thousand years ago that large scale transformation, through the use of fire and hunting, of the landscape begun. This was expedited a few hundred years ago when Europeans came to South Africa. They quickly changed the whole landscape with fenced farms, and created towns. With this they eradicated many of the large mammals; some such as the bluebuck (*Hippotragus leucophaeus*) were hunted to extinction. South Africa used to have huge migrations of springbok (*Antidorcas marsupialis*), creating some of the largest herds of mammals ever. The fences and hunting stopped this too, with the last recorded migration in 1896.

With the obvious dangers of large carnivores to humans and livestock, they were severely affected by this widespread increase in development. Along with the arrival of these farms over almost the entire landscape, many people, but particularly those in South Africa, lost the culture of living with dangerous animals, as is done in some other parts of Africa and India. Lion numbers were severely reduced to the point of extinction in South Africa, as they were in most parts of the world, with populations invariably restricted to a few small pockets. Some areas survived without too much development, perhaps only because of the high prevalence of diseases, such as malaria or sleeping sickness.

Around 1900, there was the proclamation of some of the oldest reserves in the world, such as the Kruger National Park and Hluhluwe-iMfolozi Park (HiP). HiP was originally a royal hunting ground for the Zulu kingdom, but was established

as a park in 1895. The Kruger park area was first proclaimed in 1898 as the Sabie Game Reserve by the then president of the Transvaal Republic, Paul Kruger. In 1926, the National Parks Act was proclaimed and with it the merging of the Sabie and Shingwedzi Game Reserves into the Kruger National Park which, without the linked surrounding areas, is 2 million ha in size (20,000 km²). Since then, but especially after WWII, the number of protected areas in South Africa has grown considerably. These were mostly small (< 100,000 ha) but they began to restock them with the original wildlife, some including a few extralimital species or even exotics. Some extralimital species still remain but many of the exotics have been removed.

Some of these reintroduction exercises were massive in scale. Madikwe Game Reserve for instance reintroduced more than 8000 animals of 28 species between 1991 and 1997, one of the largest game translocation exercises in the world. This included lions.

The persecution of large carnivores, however, continued, even in conservation areas such as the Kruger National Park. Conservation staff would shoot African wild dogs *Lycaon pictus* on sight, and even help farmers to kill them outside protected areas. The aim was to protect the “game” or the ungulates, and the carnivores were simply seen as a threat to the game.

In the 1960s, one of the most famous reintroduction conservation success stories in the world began—the resurrection through translocation and reintroductions of the almost extinct white rhinos (*Ceratotherium simum*). Only a few remained, most of them in KwaZulu-Natal province. Driven by local conservationists such as the legendary Ian Player, rhinos were transported all over the country, including to the Kruger National Park and even to Zimbabwe and overseas. This turned the tide on their decline and until recently they seemed secure with numbers increasing to around 19,000. However, the last three years has seen a new onslaught of poaching and a new rhino war is being fought by rangers, especially in Kruger National Park. There are now again fears for their future and a renewed effort to transfer them to

new places, again even outside South Africa, has begun. Black rhino (*Diceros bicornis*) similarly had their numbers decrease to about 2300 in 1993 but then they were similarly managed through the Black Rhino Expansion Programme which took their numbers up to about 5000. They are now also victims to the new wave of poaching and are potentially in trouble again.

For some of the large carnivores, a similar expansion exercise has been carried out. Much of the movement has not been purely for conservation purposes but rather to increase tourism potential of smaller reserves. Many tourists like to see the “Big Five” (lions, leopard (*Panthera pardus*), buffalo (*Syncerus caffer*), elephants (*Loxodonta africana*), and rhino). Similarly hunters in Africa like to say they have hunted in a Big Five area or even hunted the Big Five. For this buffalo, elephant, lion, white rhino (black rhino if just for tourism) and leopard are often introduced. Many of these translocations were done with little planning as to the potential future effects of these species in small fenced reserves. For instance, in many areas, the large carnivores quickly ate more than was sustainable and ungulate numbers needed to be supplemented at high costs. Similarly elephant numbers are approaching levels in some areas that will necessitate management so as to preserve other biodiversity in these reserves. Reserves have begun to move the elephants out or put them on contraceptives. The situation in many areas is not sustainable as moving elephants that have already been moved once sometimes causes behavioural problems. Also, there are not enough areas left needing elephants and moving them is very expensive. There are also obvious ethical considerations to the option of culling, which at some point may need to be considered.

In a more formal approach, similar in some ways to the coordinated rhino reintroductions and translocations, a plan to manage wild dogs was set up in 1997. An African Wild Dog PHVA (Population and Habitat Viability Analysis) was done which resulted in a plan for wild dogs to be reintroduced to a number of small reserves. These wild dogs were to be monitored intensively and management implemented to simulate a natural metapopulation. While the original aim of this



Matt W Hayward

exercise was to have 9 packs in the metapopulation, there are at present around 14 packs and 237 individuals. Each sub-population is managed by translocating individuals or groups to simulate natural pack dynamics and dispersals between subpopulations. Some individuals have left the subpopulations and now roam outside reserves, while some are in transit in this managed metapopulation. The only other population of wild dogs in South Africa is in Kruger National Park which is not managed and is currently estimated at 280 individuals including pups and those in the western boundary reserves.

Much of the movement has not been purely for conservation purposes but rather to increase tourism potential of smaller reserves. Many tourists like to see the “Big Five” (lions, leopard (Panthera pardus), buffalo (Syncerus caffer), elephants (Loxodonta africana), and rhino). Similarly hunters in Africa like to say they have hunted in a Big Five area or even hunted the Big Five.

Similarly, cheetahs have been managed between these small reserves to try and simulate natural processes. This is done by the National Cheetah Conservation Forum (NCCF). They aim to implement a co-ordinated relocation strategy that will: 1) ensure the long-term viability of cheetahs in small fenced reserves, 2) ensure the long term genetic and demographic integrity of the metapopulation, 3) increase the resident range of cheetahs in South Africa and 4) maximise the conservation benefits of cheetahs in small fenced reserves.

Lions were historically distributed across most of South Africa but were reduced to a few isolated areas by the early 1900s. Although presently under review, they are listed as Vulnerable on the IUCN Red List. In KwaZulu-Natal province, for instance, they became extinct in around 1938. Then, without human assistance, a male possibly migrating from Kruger turned up in iMfolozi in 1958. More were then reintroduced in March 1965. The population grew to about 140 animals in 1987 but then started declining and showed possible signs

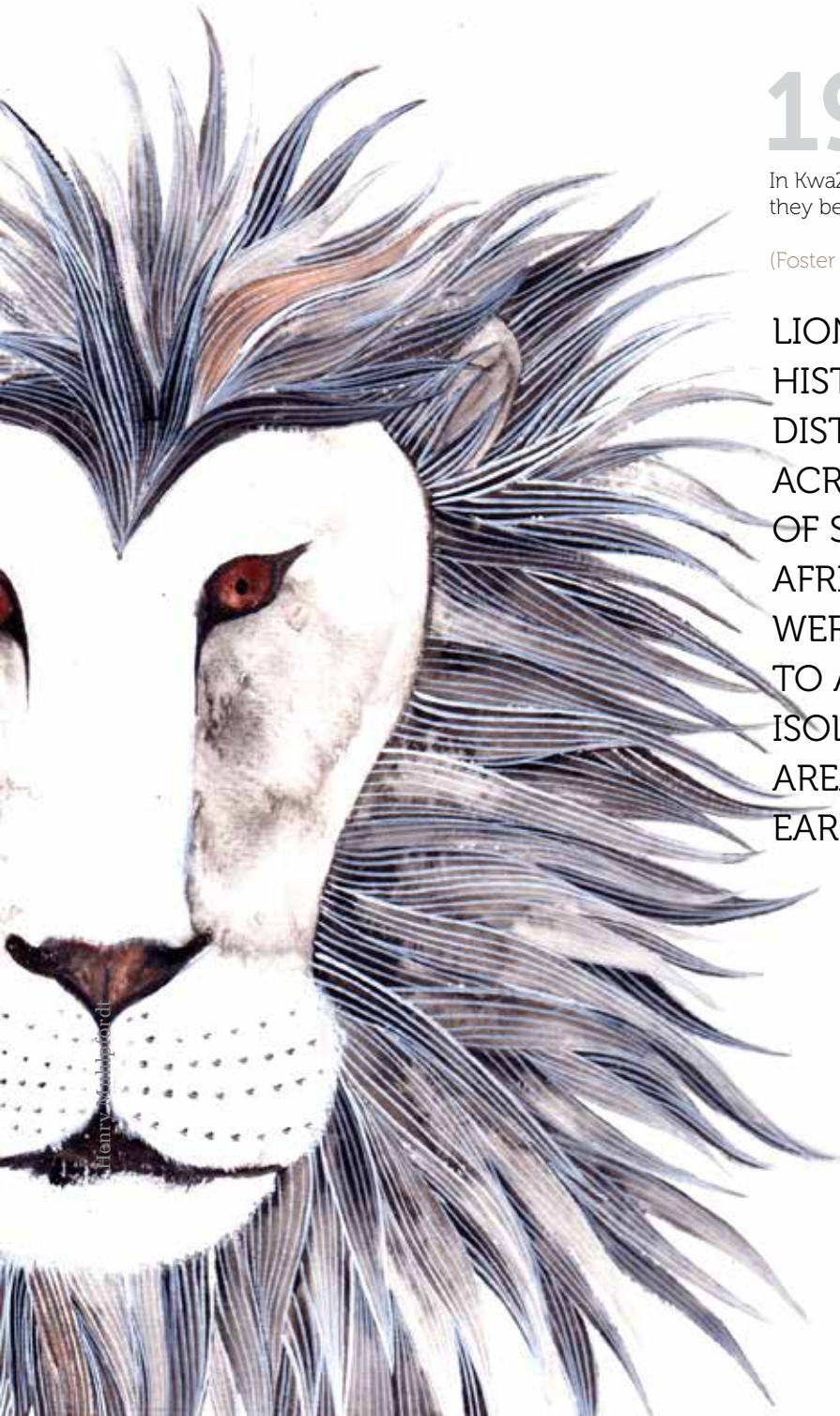
of inbreeding depression during the 1990s. To reverse this, 16 lions from Madikwe Game Reserve and Pilanesberg National Park, were introduced from 1999 to 2002. At the same time as this, lions were introduced into many other reserves around South Africa.

With the political changes in the early 1990s came a new wave of increased tourism to South Africa. This resulted in the increase in the number of reserves wanting lions on their property. Lions have

now been reintroduced into over 40 small reserves in South Africa. The dilemma is that in small fenced reserves, the natural mechanisms of lion population limitations and predator-prey dynamics are absent. In open systems, ecological and behavioural processes limit population growth. Like elephants, many lion populations are now on contraceptives. Many reserves have removal programs to limit their numbers to maintain as natural a system as possible given the size of the reserves. In South Africa, lions are hunted for sport or lion bones. There is controversy around this as some situations are called canned-lion hunting where lions are specifically bred to be hunted, and are hunted in small areas. When considering lion conservation, we do not include these lions.

Lions when moved are kept in bomas at the site of release—a soft release, which improves survival. Post-release monitoring with the aid of radio or satellite collars is essential, especially in reserves with a high human density nearby. Often human activity is the cause of post-release mortality via direct persecution following human-wildlife conflict. In the end, however, what will affect the long-term persistence of lions in South Africa is a stable economy and governance. Factors affecting translocation success are removing the factors driving the initial population extinction and supportive social contexts. Lions were largely driven extinct in South Africa by direct persecution and loss of prey base. Direct persecution is understandable given the threat lions pose to human life and livelihood, and so conservation practices aim to ameliorate this by separating people from dangerous wildlife in South Africa through the legislated use of conservation fencing. The restoration of wildlife numbers has improved the status of the prey base for lions. The economic value of large wildlife ensures it is the general public/private sector largely driving the increase in lion numbers in South Africa today, particularly because wildlife is privately owned and individual entities can make money from owning them via regular game sales. There is wide-spread support for these actions.

South Africa has led the way in faunal restoration and this has led to the situation where the country's protected areas cover 6% of the land,



1938

In KwaZulu-Natal Province they became extinct
(Foster 1955)

LIONS WERE HISTORICALLY DISTRIBUTED ACROSS MOST OF SOUTH AFRICA BUT WERE REDUCED TO A FEW ISOLATED AREAS BY THE EARLY 1900S

1958

a male possibly migrating from Kruger turned up in iMfolozi
(Steele 1970; Player 1997)



1965

more were reintroduced
(Player 1997)



1987

population grew to about 140 animals
(Maddock et al. 1996)



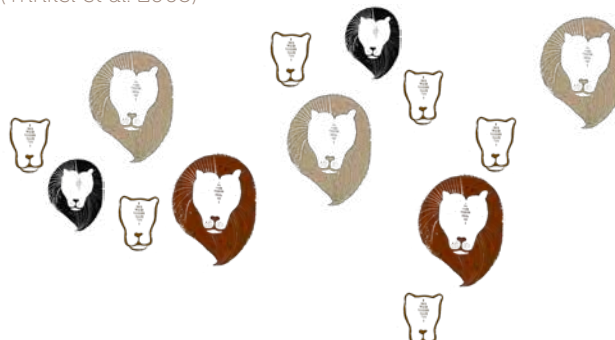
1990s

started declining and showed possible signs of inbreeding depression
(Maddock et al. 1996; Stein 1999)



1999 - 2002

lions from Madikwe GR and Pilanesberg NP, were introduced
(Trinkel et al. 2008)



while an additional 13% is largely protected via the private sector as game ranches or ecotourism ventures. This is a boon for conservation. Most southern African countries have similar levels of private conservation land ownership. Key drivers for the success of conservation activities in this region is the willingness of conservationists to undertake drastic interventions, the support of government in these actions, and the economic benefits that have been seen from returning land to conservation from pastoralism. South Africa illustrates to the rest of the world the value of adequately costing wildlife into national economics and performing active and intensive conservation management.

Key drivers for the success of conservation activities in this region is the willingness of conservationists to undertake drastic interventions, the support of government in these actions, and the economic benefits that have been seen from returning land to conservation from pastoralism. South Africa illustrates to the rest of the world the value of adequately costing wildlife into national economics and performing active and intensive conservation management.

Counter arguments to the South African conservation management philosophy are that intensive management is costly, may alter ecological interactions, may convey a sense of unnaturalness through heavily managed (manicured) wildlife areas, and benefit sharing. Intensive management is costly, but South Africans realise it is a price worth paying to conserve their natural heritage. Furthermore, the private sector is driving much of the expansion of conservation lands because it is a profitable land use, and often more profitable than the pastoralism that was historically practiced. The current philosophy of South African governmental conservation managers is to restore ecological interactions to those before humans vastly altered ecosystems and drove species extinct; however some private game ranches (particularly hunting reserves) stock extralimital species and unusual colour morphs of species because they garner higher prices from hunters. This has raised substantial concerns from the conservation community.

Notwithstanding the challenges of defining ‘natural’ on a continent that has been impacted by humans for as long as the species has existed, the management of South African reserves promotes wild-ness in a way that it is invariably part of the attraction of the sites. In fact, most reserves have humans fenced in to allow wildlife to roam freely beyond human habitation (tourist camps). Finally, sharing the benefits of protected areas to local communities is somewhat belatedly receiving the importance it deserves and local communi-



ties jointly run some reserves, but often benefit through employment, schools, education, and healthcare. The costs of living alongside protected areas in South Africa are largely mitigated by the use of fencing; however, it is increasingly being recognised that humans derive enormous physical and health benefits from living alongside protected areas and so this is an unmeasured benefit to local communities. Ultimately, the value of South Africa’s conservation management approach is illustrated by the constant or increasing population densities within their conservation areas, and the increase in the number of conservation areas. This stands in stark contrast to many other lion range states.

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The dire conservation status of lions in West and Central Africa

Besides elephants, lions are the quintessential symbol of wild Africa, used as icons of strength and power in national flags, coats of arms, historical and contemporary art, and logos of sports teams and private enterprises around the globe. The species' popularity translates to high economic potential for countries that still harbor populations; lions are at the center of the tourism industry in sub-Saharan Africa, which generated US\$ 36 billion of foreign revenues in 2012 alone. The portrayed king of the animal kingdom is losing ground, however. While lion populations are stable or increasing in a few Southern African nations such as Botswana, Namibia, South Africa and Zimbabwe, steep declines have occurred in West, Central and East Africa. These declines are driven by habitat loss, indiscriminate killing of lions in response to perceived or real conflict with livestock, poorly regulated sport hunting, and the depletion of lion prey through unsustainable bushmeat hunting. While the extent to which each of these threats limits lion populations varies by country, the impact of bushmeat hunting on lions and other savannah carnivores has been largely ignored until recently. How-

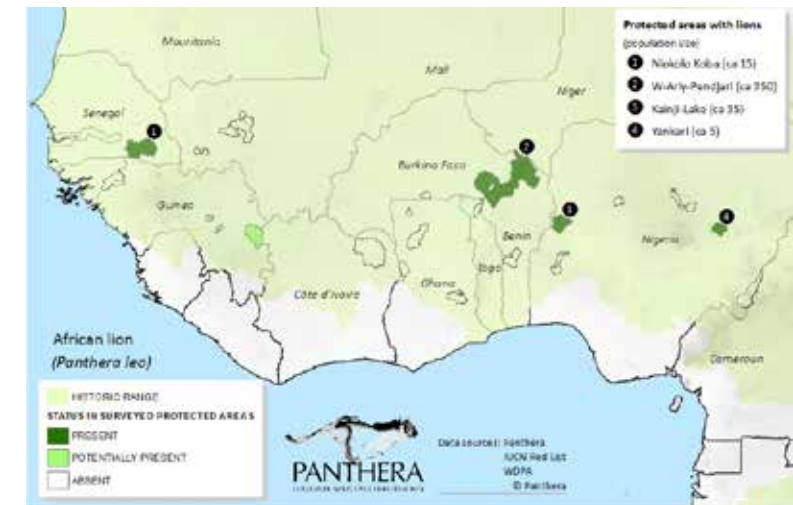
ever, it is now clear that the problem is pervasive and occurs in virtually all protected areas in savannah habitat.

As the largest land predator of the African continent, lions rely on a stable supply of prey—predominantly large ungulates weighing 200–550 kilograms. Lion population density is correlated with the available biomass of wild herbivores within this weight range. Large ungulates, however, are targeted by an unsustainable and increasingly commercialised bushmeat trade, leading to collapses in prey populations across large parts of savannah Africa. The drivers for this trade include human encroachment of wildlife areas, poverty, and food insecurity, while conservation efforts are hampered by inadequate wildlife laws and enforcement. An analysis of population data from 1970 to 2005 on 78 species of herbivores revealed that while population sizes increased by 24% in Southern Africa, they declined by 52% in Eastern Africa and by 85% in West Africa.

For lions and prey alike, the situation is most alarming in West Africa. In response, we helped to

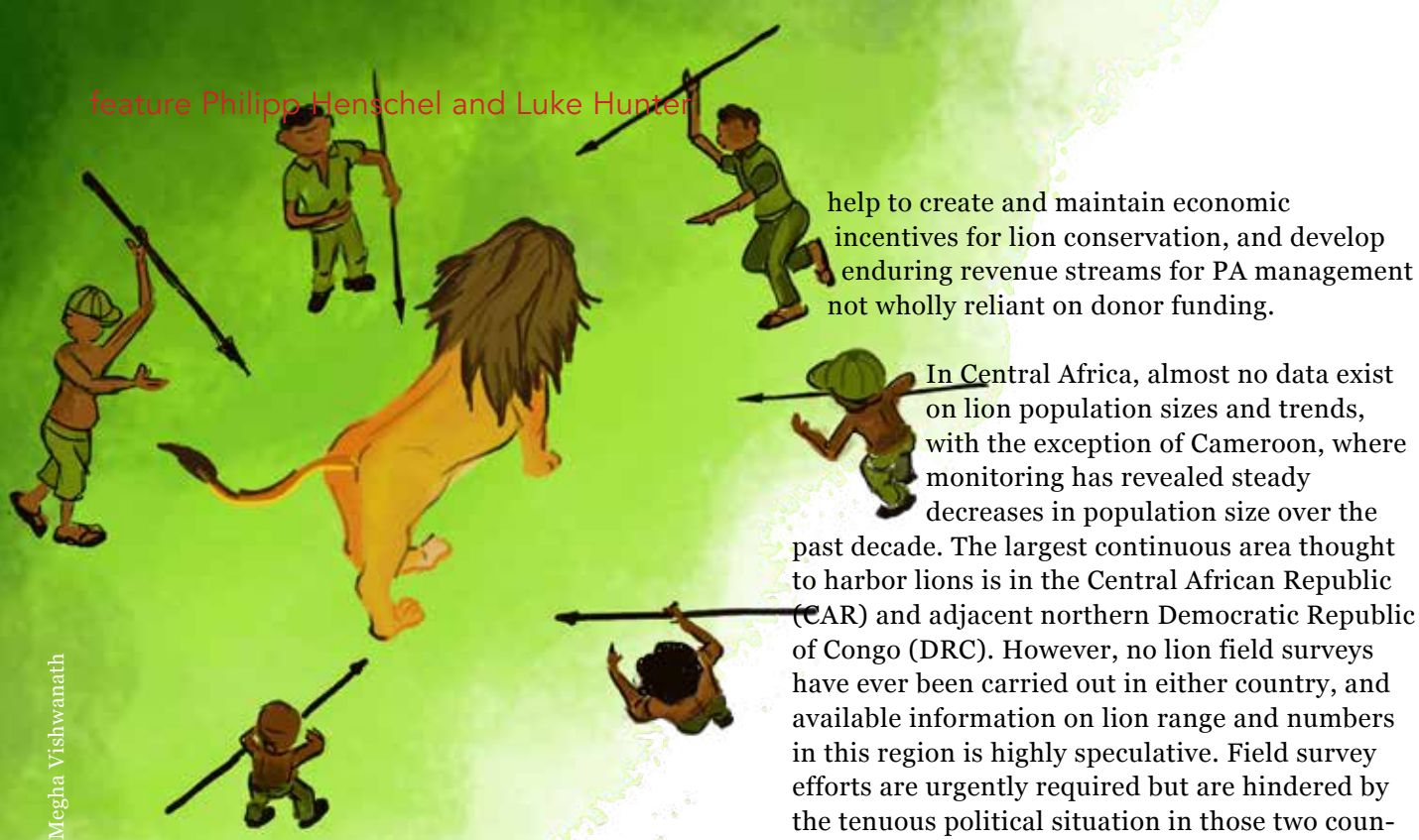
initiate and coordinate a massive effort to survey lion populations across the region. Between 2006 and 2012, 21 protected areas were surveyed, encompassing all of the largest protected areas within the historical lion range in West Africa, and the best remaining lion habitat in this region. All of the sites were reported to harbor lions in 2005, when we brought together wildlife authorities from West and Central Africa who provided their best assessment of where lions could still be found. However, after the survey was complete, of the 21 protected areas surveyed, only 4 still harbored lions. Lions now occupy only 1.1% of their historical range in West Africa. The total West African lion population is estimated to number 406 (273–605) individuals, likely representing <250 mature lions. Above 90% of the remaining lions likely persist in one population, in the trans-boundary W-Arly-Pendjari protected area complex, straddling the border region of Benin, Burkina Faso and Niger. Relict populations of <50 individuals each survive in Senegal's Niokolo-Koba National Park as well as in Nigeria's Kainji Lake National Park and Yankari Game Reserve. These recently published results warrant listing of the lion as Critically Endangered in West Africa on the IUCN Red List. The current IUCN Red List already supports a separate regional listing of the lion in West Africa, and is likely to respond to this critical situation by assigning lions the highest threat category in this region in the new version of the Red List, scheduled to be published in 2015.

While this listing may draw some much-needed attention to the plight of the lion in West Africa, concrete measures are desperately needed on the ground to safeguard the remaining populations. A comparison of protected area management



Current range of the lion in West Africa

characteristics between those West African sites that lost lions recently and those where lions still occurred revealed that two factors were mainly responsible for lion persistence: protected area size and management budget. In West Africa, where the carrying capacity for large ungulates is comparatively low, and where intense bushmeat hunting pressure inside and around protected areas is generally high, very large protected areas of 4,000 km² and above are required to ensure lion persistence. To effectively protect those areas, figures from East and Southern Africa suggest that US\$2,000/km² is required to maintain lions at carrying capacity in unfenced protected areas. In comparison, the West African sites we surveyed operated on an average budget of US\$28/km², with sites still harboring lions possessing significantly higher budgets than those that lost their lions (US\$61/km² vs. US\$4/km²). By far the



help to create and maintain economic incentives for lion conservation, and develop enduring revenue streams for PA management not wholly reliant on donor funding.

In Central Africa, almost no data exist on lion population sizes and trends, with the exception of Cameroon, where monitoring has revealed steady decreases in population size over the past decade. The largest continuous area thought to harbor lions is in the Central African Republic (CAR) and adjacent northern Democratic Republic of Congo (DRC). However, no lion field surveys have ever been carried out in either country, and available information on lion range and numbers in this region is highly speculative. Field survey efforts are urgently required but are hindered by the tenuous political situation in those two countries. Aerial ungulate counts recently conducted across northern CAR, covering 95,000 km² of the best remaining wildlife habitat, established that large mammal numbers in the area declined by 94% in the past three decades. As elsewhere, the massive collapse in wildlife numbers is driven by uncontrolled bushmeat hunting and trade. Considering the close link between ungulate biomass and lion densities, it can be expected that lion populations in northern CAR suffered concomitant declines. The remaining wildlife habitat in eastern CAR and northern DRC has not yet been aerially surveyed.

highest management budget, US\$197/km², was applied at the site that harbors >90% of West Africa's lions; W-Arly-Pendjari. The lessons learned from this comparison are as simple as they are challenging. Lion conservation efforts in West Africa should focus on the largest protected areas that still harbor lions. At these sites, management budgets need to be increased significantly; even the best-funded site in West Africa, W-Arly-Pendjari, will require a tenfold increase in management budget to meet science-based recommendations on budgets needed for effective lion conservation.

Considering that all eleven former or current lion range countries in West Africa are among the 50 poorest countries in the world, lion range states in West Africa will be unable to mobilise the resources required to secure their remaining lions. In the short term, that will require massive financial and technical assistance to range states from outside, principally by the international donor community in the developed world. For any such investments, it will be imperative that conservation initiatives assure sound governance of the funds, and that adequate funding levels are sustained in the long-term. Considering the unique potential of the lion as a magnet for nature-based tourism, investment should also be directed toward developing and enhancing photographic tourism in politically stable countries such as Benin and Senegal. This will



Philipp Henschel training rangers in Tankari GR, Nigeria

However, conservationists familiar with these areas expect wildlife collapses similar to those in northern CAR. The first step towards securing remaining lion populations in CAR and DRC will be to confirm where populations remain and assess which populations hold the best promise for the long-term survival of the lion in Central Africa.

The lions of West and Central Africa are irreplaceable. Recent molecular work has separated modern lions into a northern group, comprising the last remaining Asiatic lions in India, the extinct Barbary lions of North Africa, and lions from West and Central Africa; and a southern group, comprising lions in East and Southern Africa.

revision of the lion, and recognition of a southern and a northern subspecies, contrary to the current division into an African and an Asian subspecies. Of the ca 30,000 lions surviving today, an estimated 90% belong to the southern group. We argue that the imperiled northern group, comprising the unique lions of West and Central Africa, warrants urgent and coordinated intervention before it is too late.

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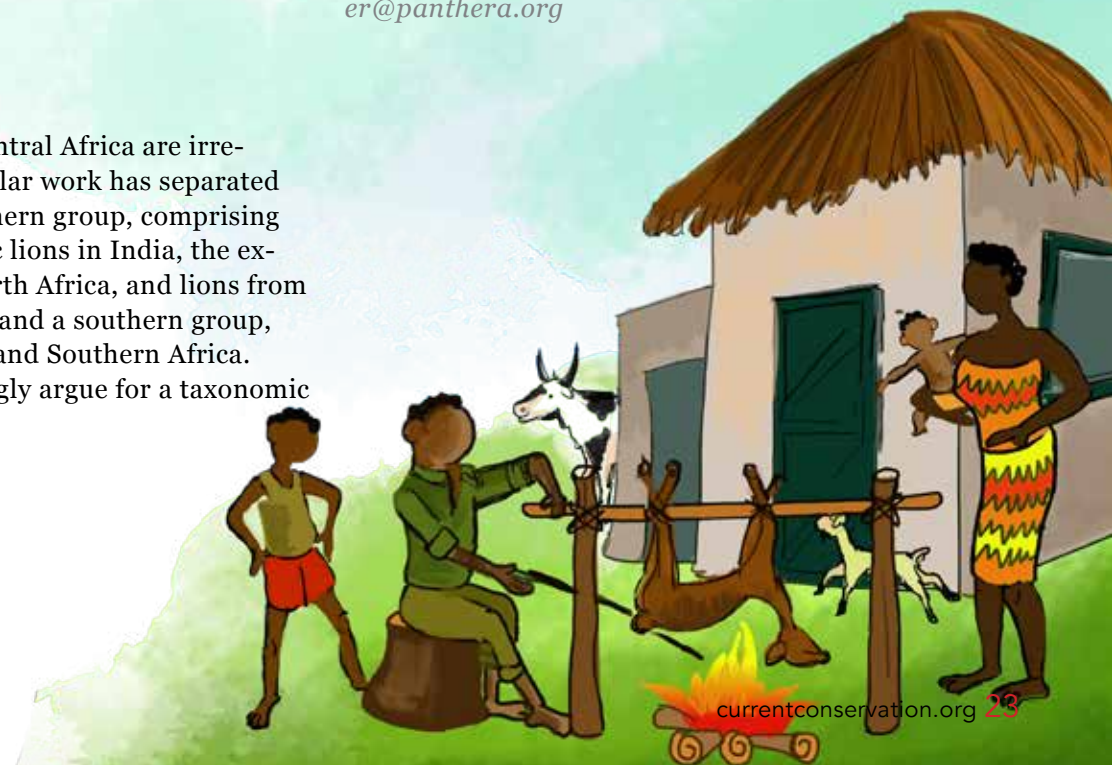
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The lions of West and Central Africa are irreplaceable. Recent molecular work has separated modern lions into a northern group, comprising the last remaining Asiatic lions in India, the extinct Barbary lions of North Africa, and lions from West and Central Africa; and a southern group, comprising lions in East and Southern Africa. Lion geneticists accordingly argue for a taxonomic



Conservation of Asiatic lions: where do we go now?



The Asiatic lions represent a carefree existence to many. Having historically benefitted from royal patronage, they continue to enjoy painstaking protection in the Gir Protected Area. The lions can rest assured that their food security, water availability, habitat suitability and safety are meticulously managed and vitriolically debated in conservation forums. Dispersing through increasingly urbanised settings, establishing home ranges in new habitats outside the protected area, nothing seems to deter the lions except for the danger posed by an occasional open well, electrified fence or poisoned carcass. Pride and love of lions of local people, media and political pressure ensure that concerted and constant efforts are kept up to save it from extinction. Recently, when 6 lions died due to rail accidents outside the PA in Rajula area in Amreli district, there was much public and media outcry as a result of which Rs. 10 crore was immediately allotted to investigate, mitigate and solve the problem. Speed regulation, fencing along railway tracks, and construction of 23 underpasses were proposed to ensure safe passage of wild animals thereafter. When results of a recent “study” conducted in Lathi Liliya area hinted at fluorosis in lions due to high levels of fluoride in the ground water, there was a scramble to act and a study was initiated to investigate the problem in greater detail. Throughout the Gir landscape, alert forest department staff are on the lookout for injured or ailing lions so as to provide prompt on-field medical attention or move them to the animal shelter at Sasan Gir for better care. The involvement is so high that it is sometimes misplaced. Some over-enthusiastic staff often take it upon themselves, even as they endanger their own lives, to interfere in cub rearing, territorial strife and movement paths of lions. The immense political and media pressure sometimes makes such measures obligatory.

So, what then really ails the Asiatic lion? Is conservation about increasing the numbers alone?

Corridors and habitat expansion

In the past, the Asiatic lion population has been revived and saved from the brink of extinction through conservation interventions at critical periods. Fortunately, in the past 3 decades, there

has been consistent growth in the population. The lion numbers were around 240 in 1990 and have increased to over 400 in 2010. The population growth has also resulted in increased movement, dispersal and establishment of lions in natural habitat patches outside the PA with the result that about 25% of the lion population is now found in Girnar WLS, coastal areas and in distinct patches of natural habitats along Shetrunji River north-east of Gir PA. In a decade, livestock depredation and incidences of lion attacks on people have increased. It is evident that the continued survival of lions depends on people’s tolerance and at the same time, protection of lions from poaching, accidents, retaliatory killing, and diseases. Dispersing lions face risk of transmission of epidemic diseases due to contact with people and domestic animals. Studies have identified domestic dogs as a major source of rabies and canine distemper outbreaks. Hard lessons have already been learnt from the canine distemper virus epidemic in Serengeti National Park. Although kept under check through stringent protection and laws, poaching is a looming threat especially when endangered species like lions are outside protected areas in human landscapes where it is difficult to monitor their safety. To keep up with these new demands, the focus of management has shifted and is now oriented towards effective conflict mitigation, secure passage and creation of dispersal corridors and resource rich natural habitats outside the PA for the spillover population.

This situation is not unique to the Gir-lion ecosystem. Worldwide, forest and wildlife conservation has stepped out of the forest into the “outside” world to confront a range of new challenges.

This situation is not unique to the Gir-lion ecosystem. Worldwide, forest and wildlife conservation has stepped out of the forest into the “outside” world to confront a range of new challenges. Landscape level planning and management is something to wish for but not easily achieved, especially for large carnivores. Expansion of habitat preferably along the natural dispersal range of lions in the Gir landscape seems to be a logical way forward but is limited by a matrix of agropastoral landscapes, industrial townships and highly populated villages.

This situation justifies the increasing focus on human-dominated landscapes and reconciliation of human needs and environmental conservation. Incentive based conservation, monetary compensation for losses incurred due to livestock depredation, relocation, community participation and empowerment are conservation approaches that are gaining favour in recent times with the lion as focal species.

Which model for Gir?

A majority of people living in the peripheral villages (97 villages and one lakh humans) of Gir PA belong to families that have been resident in this area for several generations and are predominantly land owners with medium sized land-holdings (5-15 ha) practicing agriculture. Crop raiding and livestock loss (partially compensated by the forest department) are the penalty they pay due to proximity to the forest while deriving few benefits by way of livelihood or resource collection. In spite of this, our study revealed a positive sentiment towards the forests as people recognised the benefits derived by way of ecosystem services such as soil fertility and water availability favouring high crop yields. Their attitude towards lions is even more remarkable. To say that the local people are ‘tolerant’ would be an understatement in fact they have a great sense of pride and love for lions. This attitude has favoured lion survival through several generations but as lions move further beyond this



Dry deciduous forest habitat of the Gir Sanctuary

zone of historical coexistence, an uneasy relationship and apprehension among local people endangers their survival. Thus, there is a subtle change in the cultural acceptance and tolerance of the presence of lions amidst human habitations. Therefore, future conservation success will depend on achieving goodwill towards lions across a wider swathe of the landscape.

Gir Sanctuary has emerged as a very popular tourist destination particularly in recent years with close to 3 lakh tourists contributing to an annual revenue of about 2.5 crores. An additional 250,000 people visit Tulsishayam temple located at the edge of the sanctuary, and Banej and Kankai temples located within the core area of the sanctuary. In spite of the enormous tourist influx and high revenue, local people are not directly benefiting nor are they dependent on this income for their livelihood. In such a thriving agro-pastoral environment, models of conservation where revenue from tourism is used to boost local economy and create partnerships with local people is not strictly necessary. In spite of this, the revenue generated from tourism has been made available

for the conservation and management of Gir PA by the State government of Gujarat. How effectively this fund is utilised and how well the people residing in the Gir landscape are allowed to appreciate and participate in conservation and management of the Asiatic lion and its habitat will determine the future of the species. Unless well planned, tourism and developmental activities would have irreversible repercussions where neither the local people nor the wildlife will benefit. A case in the point is a proposal to construct a ring road around the Gir Protected Area System (Gir National Park and Gir, Pania, Mitiyala and Girnar Sanctuary) at a cost of Rs. 260 crores. A project of this nature would cause land-use changes, promote rapid development and urbanisation and, most importantly, delink corridors for animal movement and hence pose a threat for the safe movement of animals.

Safeguards from extinction

The only free-ranging population of Asiatic lions is presently limited to a single habitat and conservationists the world over are convinced of the

need for additional sites. For this purpose, Barda Wildlife Sanctuary in Porbander district, at a distance of about 100 km from Gir PA, has been identified as an ideal habitat for translocation of lions. Experts are of the opinion that the choice of Barda WLS may yet be inadequate to save lions from the ill-effects of disease outbreaks and natural calamities as it is too close to the source population. On the other hand, a persistent conservation campaign since 1993 has argued the need for an alternate home to secure this endangered population and has identified Kuno WLS in Madhya Pradesh State as the most suitable habitat for this purpose. A recent Supreme Court ruling has given the much needed impetus to this long pending proposal and hopefully a well-meaning and critical conservation initiative will be realized very soon.

Lions are social animals and, being territorial, need adequate space to survive. Lack of adequate habitat would have a bearing on their ecology and behaviour by impacting on the population structure, home range sizes, activity and behaviour. The survival of lions in human landscapes may be a test of their resilience and not necessarily the ideal environment for comfortable existence.

Lions are social animals and, being territorial, need adequate space to survive. Lack of adequate habitat would have a bearing on their ecology and behaviour by impacting their population structure, home range sizes, activity and behaviour. The survival of lions in human landscapes may be a test of their resilience and not necessarily the ideal environment for comfortable existence. Political will, surplus conservation budgets, local community support and dedicated management are all in favour of conservation of the Asiatic lion. Fortunately, lions have responded to the last few decades of conservation with increasing population numbers and habitat expansion. The risks of disease, poaching, accidents, escalation of human-lion conflict, changes in people's attitude and deleterious effects of inbreeding are imminent threats but cannot be carelessly overlooked. The continued survival of this endangered species will depend on setting sight on these issues, clearly visualising and preempting future problems. In JF Kennedy's words—"those who look only to the past and present are likely to miss the future". This is something to keep in mind for the remarkable Asiatic lion.

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Bhushan Pandya

Lion with its cub at Gir.

Lion About in Livingstone

On the outskirts of Livingstone, Zambia, lies Damba Forest where impalas and kudus share a 700 acre enclosure with a pride of lions with radio collars. This is known as Stage 2, where the first generation of lions to be walked by ALERT’s conservation program have had a litter. These lions were walked as cubs through their habitat to familiarise them with the wildlife they would encounter upon release. In two years’ time, their litter will be the first lions released into the African wild without having any human interaction except for tranquilised medical checks. These cubs are raised solely by the pride that lives in the 707 acre enclosure that is regularly stocked with live game for the lions to hone their natural hunting instincts in order to survive.

“As of 2013, there are only 32,000 lions in the African wild,” says Daryl Black, the General Manager of ALERT – African Lion Environment Research Team – in Livingstone. “That’s an 80% drop from the 200,000 that roamed Africa during the 60s and 70s.”

The drop is due to the Asian black market and people’s belief that parts of exotic animals have medicinal benefits.

Daryl is based at the Thorntree River Lodge about 10 km outside of Livingstone, in the Mosi Oa Tunya National Park, where the program hosts its volunteers. He has extensive knowledge of African wildlife, having worked as a guide for over ten years in Kenya’s Maasai Mara Park. He is in charge of overseeing ALERT’s project, making sure it runs smoothly so that the release of the programme’s lions is a successful accomplishment.

“What about the lions that have been walked and hand-raised?” I ask Cara Watts, lion manager of the project, as we sit in the Land Rover with two volunteers and an intern, watching the pride in Stage 2, Zulu, the dominant male, shrugging our presence off.

“Lions possess the natural instinct to hunt and kill” she whispers.

“Our lions are walked through the Mosi Oa Tunya National Park,” Daryl explains the benefits of walking the cubs until they are 18 months old. “Here they come in contact with wildlife such as buffalo, elephants, giraffes and impalas. When the lions are about 15 months old they’ll even hunt while we walk them. To them, we are simply part of the pride that raises them.”

The current cubs that are being walked will be the last. Within a year they will be retired and moved to Stage 2 where the focus of the project will be to raise the necessary funds to build an electrified 9 kilometre double-fence for Stage 3.

ALERT’s project is not just about the lions. It also focuses on giving back to the community by providing gainful employment which gives a sense of ownership and community and teaching in the local schools.

“Education is a very important part of this programme,” says Dr Jackie Abell, ALERT’s research manager. “The volunteers are given an education pack which they learn and then teach the local kids in the school. Some of the kids have no idea what kind of animals they have here. And even though it’s currently school holidays, these kids come in on their own time and of their own free will because they are keen to learn. We’re changing their attitude about conservation.”

“It’s grown a lot,” says Jeremy Tiger, a Canadian who had volunteered with the program when it was a year old after it began in 2008. He was walking Zulu when Zulu was just 14 months old. This time, he’s returned with his partner, Alanna Swarup.

“He didn’t have to convince me,” she says. “He was always talking about it and we had some holiday time coming up so we decided we’d come here and help with the lions. I love that it’s hands on,”



Cub feeding at Livingstone, Zambia

Simon OChen

she says, adding “Even chopping up the donkey meat.”

The four stages to release lions into the wild are:

Stage 1

Lions as young as six weeks are taken on walks to build their confidence and allow their natural hunting instincts to develop.

Stage 2

Set in a 700 acre enclosure with plenty of game to hunt, the lions learn to develop a natural pride social system.

Stage 3

The lions are released into a larger eco-system (80

km²) in the Damba National Forest where they will learn to compete with other predators such as hyenas. The lions will give birth to cubs raised in a completely wild environment with no human contact – effectively making them wild lions.

Stage 4

After maturing at the age of five, the cubs born in Stage 3 will be released into the African wilderness of Damba National Forest with all the skills and human avoidance behaviours of any wild-born cub.

Simon OChen is a guitar-playing, nomadic, bartering (don’t like money) adventure travel writer hitching around the world by land and sea only. During his travels, he joins conservation groups in exchange for articles about their organisations, thenomadicdiaries@gmail.com.

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