

**PRI**  
AWARE

CONSERVATION & PHOTOGRAPHY  
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**DECLINING LION POPULATION  
IN WEST & CENTRAL AFRICA**

BY PETER HUDSON



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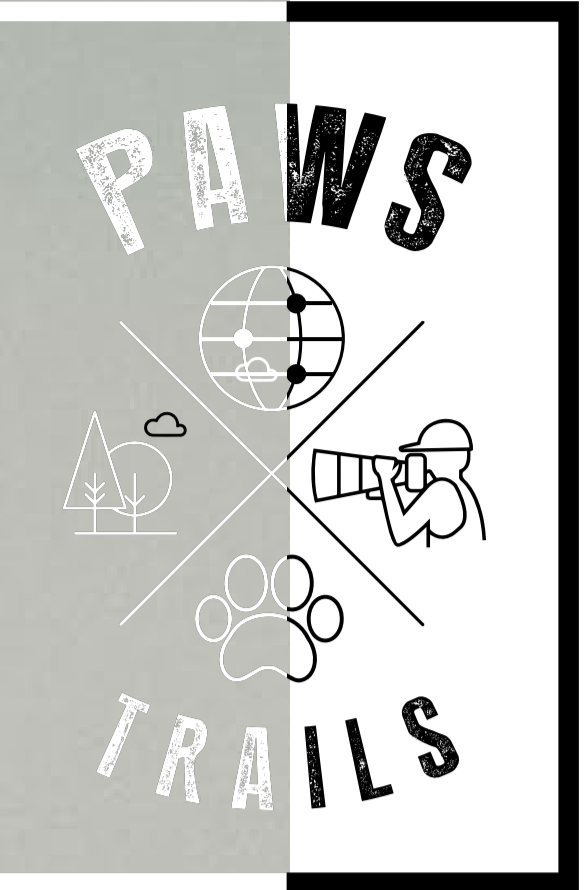


Photo By:  
Aditya Singh

**Publisher:** Paws Trails Explorers **Editor:** Raghul Patteri **Conservation Director:** Peter Hudson  
**Content Director:** Nisha Purushothaman, **Director Photography:** Hermis Haridas, **Design desk :** Nithya Purushothaman  
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Raghul Patteri  
Editor

Lions - fondly, but erroneously referred to as the king of the jungle in Children's tales. Erroneously because, lions prefer to inhabit grasslands and savannas while being absent in dense forests. But you will be right to refer to them as 'king' as they are royalty indeed of their habitat. The Apex predator of their kingdom, these magnificent animals portray royalty with their proud physical attributes, raw power and structured social order.

But this perception of royalty attached to them has also been a cause of the Lion's misfortune. There was never a trophy hunter who did not want a dark maned lion to his name. The destruction of habitats due to natural and man-made causes led to further reduction in lion numbers. The ever-growing human population puts more pressure on lion habitats for livestock grazing and farming, activities which inherently increases the opportunities of man - lion conflicts.

Once a widespread species which roamed throughout Eurasia, Africa and North America, the lion today is limited to fragmented populations in Sub-Saharan Africa and one small critically endangered population in India.

This edition of PT Aware focuses on the problems faced by African Lions. The magnitude of the problem will self-reveal from a simple fact that lion population in Africa have declined by 43% since the early 1990's. It is difficult to fathom that nearly half of the numbers of one of the most recognized animal symbols in human culture has been wiped out in less than 30 years!

PT Aware seeks to increase awareness about wildlife conservation issues around the world - highlight both worrying and exciting facts illustrated by photographs provided by the Paws Trails community. Our next issue will focus on African Elephants, therefore prepare to start uploading your photographs of these big mammals! A selection of your photographs will be chosen for publishing.

<http://www.pawstrails.com/register> Register > Login > Contribute > PTAware



Photo by: Hakeem Kokkodan  
Masai Mara, Kenya

EDITOR'S DEN



A lion with a thick, golden-brown mane stands in a lush green savanna. The background is a soft-focus landscape of rolling hills and dense vegetation under a bright sky.

# FOUNDERS' NOTE

Welcome to the second edition of PT Aware. Our heartfelt thanks for the warm reception accorded to the launch of this magazine and its first edition.

This edition focuses on one of the most iconic animals which ever roamed this planet - Lions. To the uninitiated, it might come as a surprise that even these seemingly all-powerful beasts face many threats to their very survival. The most recognized symbol of the African wilderness is seeing their numbers decimated in many regions.

Being regulars to Masai Mara, lions are close to our heart. We can spend hours without complaint watching them, waiting for a sought-after photographic moment. Over our many visits we have understood the importance of lions in this ecosystem. It pains us to see these magnificent cats in trouble!

It is our appeal to all our readers to contribute in your own way towards lion conservation. You can donate to worthy causes and NGOs working for lion conservation or can even contribute by opting for eco-tourism to the glorious lands where the lions rule.

We thank all our contributors from around the world, who help us keep PT Aware a true community project. Your photographs lend life to our stories and are a testimonial that everyone can do their bit for the protection of nature. We request you to keep supporting us and contributing images online.

Let us become partners of mother earth.  
No to poaching.  
No to wildlife trafficking.  
No to any products containing wild animal parts.  
No to products which leads to loss of wild habitats.

PT Aware will bring you the latest in research and scientific knowledge in each edition, hoping that these will come handy in your crusade to protect mother earth.

Let us hold our hands together for this new journey!

[www.pawstrails.com](http://www.pawstrails.com)

**Hermis Haridas & Nisha Purushothaman**

Founders - Paws Trails Explorers



A lioness is lying down in a savanna landscape during sunset. The sky is filled with dramatic, colorful clouds in shades of orange, yellow, and blue. The lioness is the central focus, looking towards the right. The foreground shows some green grass and small bushes.

THE STORY

# Declining Lion Population in West & Central Africa

By Peter Hudson,  
Conservation Director, Paws Trails





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**Peter Hudson is a scientist, photographer and conservationist. He undertook his first scientific expedition to Africa at the age of 21 and has been a regular visitor ever since. Passionate about nature, he manages his own 36-hectare nature reserve in Pennsylvania which is home to bears, bobcats and other animals.**

In his professional career, Peter is the Willaman Professor of Biology at Penn State University. The focus of his research has been the infectious diseases of wildlife and in particular how new diseases emerge. He has been running scientific studies on the wolves in Yellowstone, tortoises in the Mojave Desert and bighorn sheep in Idaho. He is currently involved in a major project in Australia investigating the viruses associated with bats.

**Peter established a new global health institute at Penn State that seeks to develop the concept of One Health, whereby the future health of humans is dependent on that of the environment, livestock management and the conservation of wildlife. He is an adjunct Professor at The Nelson Mandela African Institute of Science and Technology based in Arusha, Tanzania and a Fellow of the Royal Society.**

[peterhudsonphotos.com](http://peterhudsonphotos.com)

[instagram.com/peter\\_hudson018](https://www.instagram.com/peter_hudson018)





Photo by: Shaji Mohammed  
Masai Mara, Kenya



If you truly want to go and see and photograph Lions in the wild, then it's not that hard - go to one of the more spectacular national parks in East or Southern Africa and you can be guaranteed on seeing lions within 24 hours. Your first sighting is typically a pride lying around in the shade, without a care in the world, most of them will probably be asleep since that is what lions do most of the time. A lioness typically sleeps for about 18 hours a day and the males spend even more time in slumber-land. The animals behave as if they don't seem to have a care in the world, life appears easy and relaxed and when they get hungry, they can just go off and grab some passing wildebeest for their next meal. In reality, life is not that easy for free living lion populations. A group of scientists led by Hans Bauer from the University of Oxford and Craig Packer from University of Minnesota have been looking at the spatial variation in the state of lion populations and have become increasingly concerned about those in west and central Africa (Figure 1).

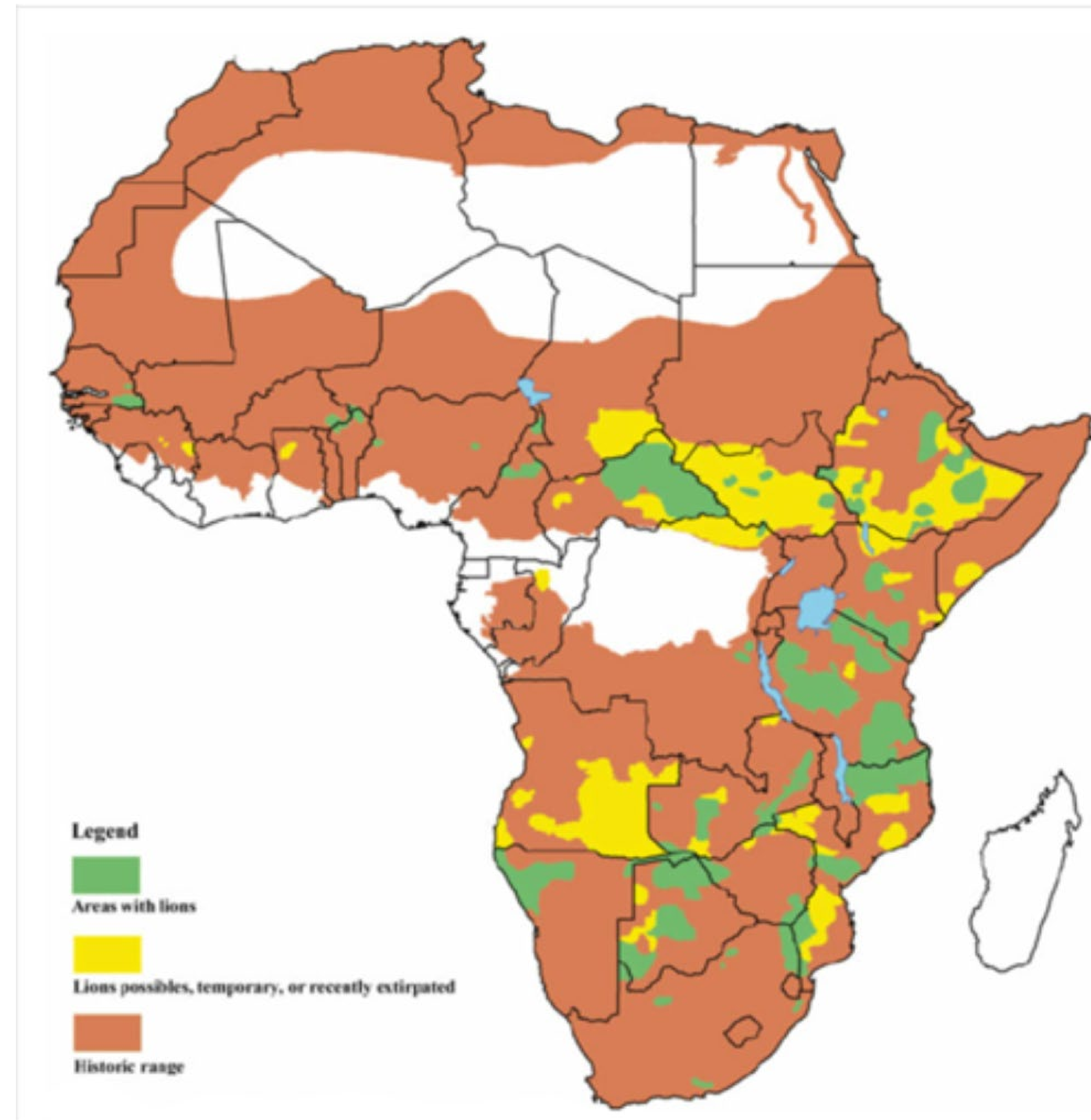
The bottom line is that lions are indeed in trouble - overall the lion population in Africa has fallen by 82% over the past 100 years with current numbers estimated at between 23,000 and 32,000 with by far and away the majority of lions restricted to protected areas such as national parks. About 6,000 of these lions are in areas where they are likely to be wiped out in just a few years. In a relatively short time, we could see lion populations much smaller than they were previously and restricted to just a few national

parks. This article explores the current knowledge about lion populations and looks to see if the parks that carry reasonable lion numbers could sustain lions in the wild.

### Lion conservation

The issue underlying the concern over lion conservation is that the status of the lion population varies from one location to another. Overall lions have declined by 43% over the past 23 years, although this is an average figure and hides the underlying dichotomy with lions in countries like Botswana, Namibia and South Africa having actually increased by 12%, whereas those outside this southerly range have declined by 60% or more. This is the central problem of using averages - when some populations are doing well, it hides the real finding that some are doing very badly, and it makes it look as though overall the average situation is not as bad as it really is. Averages never tell the whole story unless you are also told the underlying variation.

The conservation status of every animal is defined by the International Union for the Conservation of Nature (IUCN), the global authority on nature conservation that works to mitigate the impact of human impact on biodiversity. They use a set of criteria to evaluate the extinction risk of thousands of species and this in turn influences government policy and the actions of NGO conservation teams that make up their membership. Currently, the lion population is defined as vulnerable which means that it is likely to become endangered unless the circumstances that are threatening its survival and reproduction do not improve



### Figure Legends

Figure 1: Historic and current range of lions in Africa with areas highlighting those populations threatened or close to extirpation (after Trinkel & Angelici)





Photo by: Nitin Michael  
Masai Mara, Kenya





soon. If the lion population falls by more than 50% over 3 generations then it would be defined as endangered and the argument is that it currently exceeds that in all but southern Africa – and the small population of Asiatic lions in Gujarat, India. The current proposal to the IUCN is to change the designation of lions to being regionally endangered since in west and central Africa, lion numbers have fallen by more than 50% and the current data indicate that we can expect the lion populations to continue falling for the next 20 years unless action is taken. Of course, designation highlights the status and should lead to more action and an increase in conservation priority.

#### **The West African lion population**

With such a fragmented population of lions left in west and central Africa, the situation is indeed dire. This is even more worrying when we start to look at the genetic diversity in the lion. Recent molecular analysis shows that the animals in west and central Africa are genetically distinct and not connected with the lions from east and southern Africa. So, if we were to lose the lions from west and central Africa, this would greatly reduce the genetic diversity of the lion population as a whole and would increase the vulnerability of the remaining lions to disease and other threats. At the same time, we should not try to invigorate any remaining population with lion genetics from east Africa. The lions in west and central Africa are probably distinct because they have been separated from the those of eastern and southern Africa and evolved under different environmental conditions.



### Reasons for decline

The primary reason behind most conservation issues is the continuing growth of the human population and the pressure this is placing on natural lands. The human population in Africa is increasing faster than anywhere else in the world and so it is not surprising that habitat loss and the extensive loss of the prey food supply is getting worse and having a dire impact on lions, added to

this is the indiscriminate killing of lions to protect livestock and humans. Added to this is the killing of lions to sell parts for traditional medicine in Africa and China coupled with the poorly regulated trophy hunting. The priority amongst these factors is always habitat loss although many of these factors interact, for example as the habitat gets fragmented so we lose herbivores and the lions must disperse and then they come into conflict with cattle owners and others.

### Will protected areas work?

Looking to the future, it would appear that lions may well become restricted to protected areas such as the national parks of Africa. Would this work for lions? One of the concerns is that many of the parks are fragmented from each other making it hard for lions to move from one location to another. Even in the Serengeti ecosystem, it is hard for the lions in the Ngorongoro crater to disperse out

towards the neighboring plains and lion prides of the Serengeti since they have to run the gauntlet through the herds of the Massai cattle and they kill the lions. In a similar way, the Nairobi National Park adjoins the city and is a fine national park which has lions but these could only persist because the fence is open on the side away from the city and this allows the lions to disperse.





The fencing in of lions is a contentious issue. On the one hand, fencing small areas and then intensively managing the lions would at least allow some localized retention of lion prides even when they can't disperse. On the other hand, these population must be managed intensively with the use of hormonal contraceptives for females to avoid over population and the continuous introduction of new males to maintain genetic diversity and avoid inbreeding issues. At the same time, fencing in some areas will stop the migration of the herbivores such as the movement of wildebeest and this could lead to collapse of the prey base and the system, so the issue of fencing is not a simple one.

The other issue is funding of the conservation action needed for the lions. Protected areas in the form of national parks are the foundation of our attempts to conserve biodiversity and it is imperative we get this right if we are going to retain some semblance of natural heritage for our children. Thinking about concentration of funding with respect to lions is sensible since lions are an apex predator and as such live at lower densities and require a large and diverse prey base so if we get it right for lions then it should work for most of the other animals in the ecosystem. What is more, people visiting parks want to see the iconic species like lions, so focusing on lions should have major knock on effects economically. If we could manage Africa's protected areas correctly, then we could expect the lion populations in these areas to be three to four times greater than they currently are and this would not only secure the

ecosystems that lions inhabit but also lead to significant conservation gains for many other species. These species and areas of natural heritage have symbolic and cultural significance both within Africa and in other parts of the world while also providing ecosystem services such as water and air quality to local people. Moreover, the role of ecotourism can support rural and national economies. In South Africa ecotourism generates as much revenue as farming, forestry, and fishing combined.

Basically, to manage a protected area for lions, currently comes in at just under \$1000 per square kilometer per year; in reality this is a minimum and really parks need twice this amount (\$2000) to provide the support and infrastructure that would retain a healthy lion population. The tragedy is that 96% of protected areas do not receive anything like the minimum amount and the median level is just \$200 per kilometer per year, well below the current level of funding required. Indeed, the estimate is that the deficit of funding to African national parks is in the region of \$1 to \$2 billion a year. This means that many protected areas risk losing the majority of their remaining wildlife resources before they have the chance to benefit from them in economic terms. The consequences are obvious, less tourism and the downgrading of protected areas with further loss of wildlife. The current funding of most African protected areas needs to be increased 3 to 6 fold to obtain sufficient funding for conservation actions for a healthy lion population. The majority of protected areas need to develop and maintain infrastructure, to



Photo by: Athira Mohan Krishnan  
Masai Mara, Kenya





Photo by: Peter Hudson  
Masai Mara, Kenya





Photo by: Preeti & Prashant Chacko  
Masai Mara, Kenya

purchase and maintain vehicles and other equipment, and to train, deploy, and motivate staff. In some cases, the staff that are employed are so poorly paid or unmotivated that they themselves contribute to wildlife declines due to the social and financial gains that can be derived from engaging in illegal poaching. One proposal is to channel more of the funds from ecotourism to protected areas and to have this responsibility pass to an accountable NGO. The proposal suggests this would result in less money being lost through corruption, encourage more philanthropy and in the longer term provide more income for the countries which own the protected areas.

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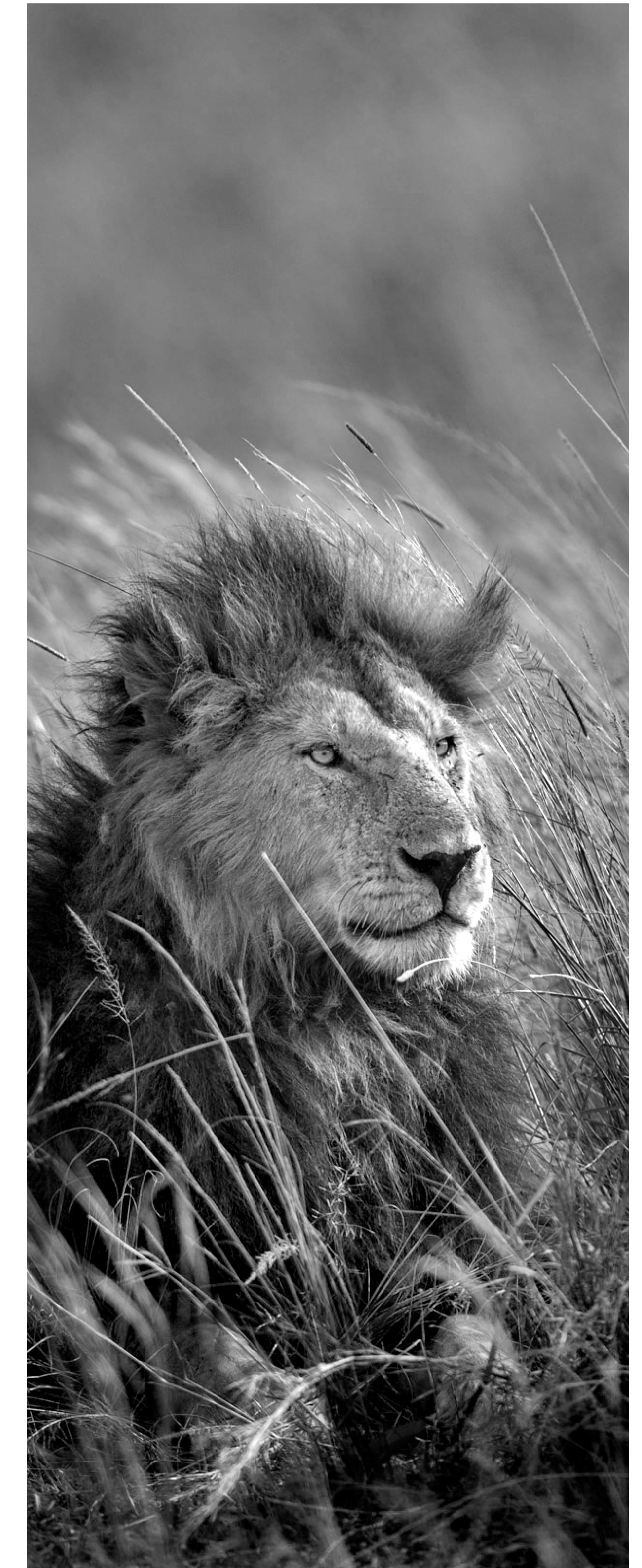


Photo by: Hermis Haridas  
Masai Mara, Kenya

















Photo by: Muniswararaja Palaniappan  
Masai Mara, Kenya









Photo by: Sinoop Keloth  
Masai Mara, Kenya



Photo by: Akhil Vinayak Menon  
Masai Mara, Kenya





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Photo by: Kalidas Pavithran  
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