



Once there were  
**lions**

*Africa's vanishing large predators may soon exist only in our memories, warns conservation biologist **Laurence G Frank**.*

**W**e have just recaptured Lion Male 93, a brother of his has been missing for weeks. LM 93 is lucky to be alive. His radio collar prevented a new wire snare from tightening around his neck, and at length he broke free. The wire rubbed his neck raw, but did not strangle him outright. Nor did it become embedded in his neck, like the noose on that lioness a few years ago. We could not dart *her* before the festering wire killed her.

When we captured Striped Hyena Female 06, a snare had been buried in the flesh of her neck for so many years that we had to chisel away a solid ring of bone-like calcification to remove the wire and clean the wound. She recovered and has since had several litters.

Snares are slow, hideous; poison is fast. Spears are faster still, and bullets kill quickest of all. Africa's great predators are disappearing, yet hardly anyone is paying attention. Not long ago, conservationists estimated there to be well over 100,000 lions in Africa. Today, the best estimate is of the order of just 23,000, perhaps half of which are breeding adults, the great majority in national parks and reserves. There are perhaps 15,000 cheetahs, perhaps 5,000 wild dogs. We have no idea how many hyenas exist, but they, too, are being poisoned into extinction.

Even the lions of Maasailand are disappearing. While the Maasai might once have been natural conservationists, young men with spears have reduced to a handful the lions of Nairobi National Park. Until a few years ago, both lions and hyenas were common in the Chyulu Hills between the Amboseli and Tsavo National Parks. Poisoning and spearing has decimated that population. The same is happening in Tanzania's Ngorongoro Conservation Area. And there have been poisoning incidents in the Mara.

While all African wildlife is dwindling, the large predators are especially vulnerable as they kill livestock. Historically, herders lacked the technology to rid themselves of predators: it took the Europeans millennia to get rid of lions, wolves and bears. With better technology this took two centuries in eastern North America, and just a few decades in

the American West. Twenty years ago, large carnivores were still abundant in Kenya and much of eastern Africa, but with cheap and effective poisons and the ubiquitous AK-47, Africa's predators may largely disappear in our lifetimes. Traditional African livestock husbandry is well adapted to protecting livestock from predators, but bullets and poison will always be cheaper and simpler than even the simplest preventative measures.

For decades, conservationists have been raising the alarm about elephants, rhinos and gorillas. Why the silence, then, when predator populations are in freefall? There are several reasons. First, predators are doing well in protected areas: a tourist can go to almost any park in Africa and see a dozen lions on an afternoon's game drive (Nairobi Park is a recent, appalling exception). What the tourist does not see is that outside the parks the predators are almost gone.

Secondly, elephant and rhino carcasses are obvious; in the 1970s the world was horrified by images showing whole groups of dead elephants, rotting hulks with their faces hacked off. Predators die quietly in the bush and are rarely seen by humans. Who ever finds the leopard skeleton with the snare still tangled in its cervical vertebrae? Or the rotting carcasses of a dozen poisoned hyenas, surrounded by those of scores of poisoned vultures? Where are all the photographers when gangs of frenzied *morani* spear a litter of lion cubs?

And finally, where are the conservation groups that should be shouting from the rooftops? Not long ago, when I tried to light a fire under the biggest of them all, the simple reply was: "We are putting all our emphasis on programmes focused on tigers, elephants, rhinos, whales and dolphins, mountain gorillas, and giant pandas." In other words, we shall go on selling to the public what we have always sold, because we know what sells. Let's not confuse donors with more bad news.

The result, in a very few years, is that lions will be like those rhinos, gorillas, tigers and pandas: isolated populations in national parks, far too small to be genetically viable, and dependent on intensive protection and constant human manipulation. Big zoos.



If predators are still abundant in parks, why worry about them outside protected areas? These are wide ranging animals, and few parks are large enough to provide adequate protection. When a pride of lions wanders beyond park boundaries on to overgrazed rangeland devoid of wildlife, it resorts to feeding on goats or cattle. Unless parks are immense, the home ranges of most predators will extend across boundaries, exposing them to the temptations of livestock, with the inevitable consequences.

In many 'protected areas', such as the Maasai Mara, cattle are allowed to graze within the reserve, and when the reserve's predators kill the trespassing cattle, the herdsman spear them in retribution. Park boundary zones are very often infested with snares set for game animals; snaring around the edges of the Serengeti exacts a fearful toll on spotted hyenas from throughout that Park, as they follow the migrating herds of zebra and wildebeest.

Parks are insecure for another reason: the political instability plaguing Africa threatens wildlife as well as humans. How many African parks have been cleared of animals on being overrun by hungry armies or refugees? Wildlife populations built up over many years of protection within Zimbabwe's conservancies were destroyed in just a few months of intensive snaring after the government there turned the land

over to 'freedom fighters'.

Even if animals were secure in parks, we should still face the eventual loss of these species, as few parks are sufficiently large to preserve genetic diversity over long periods. Without a continual exchange of genes, doom through inbreeding is the inevitable fate of all such tiny, isolated populations. Moreover, small populations are vulnerable to disease, such as the canine distemper virus that killed one-third of the Serengeti's lions in the early 1990s, and that regularly wipes out populations of African wild dogs.

For all these reasons, it is vital to retain viable wildlife populations outside and between protected areas, lest parks become islands in seas of humanity whereon all naturally wide-ranging species are doomed to eventual extinction. Without genetic interchange, it will become necessary to move animals continually between parks, a level of intervention probably not feasible in any but the most affluent of countries.

Despite hysterical recent press coverage, one thing *not* threatening lions is the Feline Immunodeficiency Virus ('lion Aids'). Wild cats and hyenas have been living with this harmless virus for millions of years. Studies of their immune systems are therefore of interest in seeking a cure for HIV, precisely because there is no evidence that the closely related predator virus harms its animal hosts.

Amazingly, almost no research has been done on ways of fostering coexistence between lions and livestock outside parks. So we still know almost nothing about the behaviour and ecology of African predators in human-dominated landscapes, living under severe pressure from humans. Instead, nearly all of the research to date has been on the basic biology of protected populations in parks.

Since 1997, the Laikipia Predator Project has been addressing both issues. The Laikipia District of Kenya is unique in that wildlife populations, including those of predator species, are stable or increasing, rather than disappearing; Laikipia produces more lions than the ecosystem can absorb. Although there are no formally protected areas, the semi-arid ecosystem is virtually intact on the well-managed rangeland of Laikipia's commercial ranches, which host the full array of native wildlife.

But this is livestock country, and the predators take a significant toll on cattle, sheep, goats and camels. And, while the predators feed very largely on wild prey, we estimate that it costs ranchers about US\$ 350 annually in livestock to tolerate a lion in the area, perhaps US\$ 35 for a spotted hyena, with both leopards and cheetahs somewhere in between. With income from eco-tourism and a strong conservation ethic, Laikipia's commercial ranchers are



Photos: © PAOLO TORCHIO

**Vanishing breed? Lions, while still faring well on some private ranches in Laikipia (above and facing page), have all but disappeared from other non-protected areas in East Africa.**

willing to absorb considerable depredation costs, but lions that habitually kill cattle or sheep must eventually be shot.

To a pastoralist, such livestock losses are a much more serious blow, so tolerance is lower in the communal areas inhabited by the Laikipiak Maasai. Lions do not survive long on most group ranches, and have been eliminated throughout most of northern Kenya. In such areas, hyena depredation on sheep and goats is now the most common form of human-wildlife conflict.

Although lions have largely disappeared outside parks elsewhere, the Laikipia population is holding its own, or increasing. Lions can reproduce at 20 % annually in good conditions; in Laikipia conditions are excellent. Yet the annual lion surplus has nowhere to go, as people on lands surrounding Laikipia are hostile to predators; zoos already have more lions than they can handle, and translocation (as we shall see) is not an option.

Some shooting is thus unavoidable in Laikipia, but informed management could minimise lion reproduction, lion shooting and livestock losses. There is still essentially no lion management anywhere except in South Africa. Our goal is to make pastoralists more tolerant in Kenya's vast north, so the surplus Laikipia lions (and other wild species) can start recolonising that immense denuded landscape.

To gather data on the numbers and movements of Laikipia's lions, we fit them with radio collars. But, unlike park lions, these animals are wary and nocturnal. We had to devise novel ways of capturing them. We have so far collared and released more than 100 lions in Laikipia. Through aerial radio tracking, we have found that they stick closely to the commercial ranches, where they are (relatively) safe, hardly ever straying on to the communal lands where there are too many people and livestock, and where wild prey is scarce and poison is widely used. Even on the commercial ranches, some 20 % of the lions are killed annually, always in response to livestock depredation. And habitual livestock killers have a very short life expectancy.

Predators are notoriously hard to count, but we estimate a population of perhaps 120 adult and sub-adult lions in the 7,000-km<sup>2</sup> Laikipia rangelands. For the most part, they live in small groups of pairs of females and their cubs, while males come and go between the groups.

Research I have done with Mordecai Ogada and Rosie Woodroffe shows that traditional African livestock husbandry methods offer quite effective protection against predators. This is not surprising in that these traditions have developed over millennia in response to the twin threats of predators and human raiders. Livestock in

East Africa is closely herded by day and confined in thornbush bomas at night, quite unlike Europe and North America, where cattle are simply left to graze in a landscape from which predators have been eliminated.

Lions usually kill cattle by stampeding them out of the bomas at night, so the key to preventing losses is to build strong enclosures with thick walls and stout gates able to withstand the pressure of panicked cows. Predators are less likely to approach bomas where there are lots of people. So bomas where several herdsmen live along with their families are safer than smaller ones attended by just one man. Alert dogs warn herdsmen of prowling lions, and a shot in the air is usually enough to chase off the lions; a strong light too will generally discourage them. But dogs have their disadvantages: herdsmen may also use them for hunting wildlife, and they may carry diseases that can decimate wild carnivores, especially the African wild dog.

None of these measures is expensive, and all are certainly cheaper than the loss of a few cattle. Well-managed ranches, by contrast, suffer relatively little depredation and need to kill only a few problem lions.

Communally-owned group ranches in Laikipia are embracing eco tourism, with help from the neighbouring commercial ranches and various NGOs. But tourists

want to see wildlife, especially lions. So these nascent ventures are caught in a double bind: their traditional economy is based on livestock, which is threatened by predators, yet they want to participate in a new economy based on tourism, which (to be successful) requires predators. We hope, by strengthening traditional livestock management practices, that we can help the local people to realise both goals.

There are very few lions today in the communal areas of Laikipia, and most wildlife-related problems come from spotted hyenas. On commercial ranches, losses to hyenas are rare, usually occurring only when livestock stray during the day and do not make it back to the boma at night; diligent herding prevents straying. In the communal areas, strays are rarely left out at night, presumably because people herding their own stock are more conscientious. However, hyenas come around the villages nightly looking for scraps of bone or hide, and occasionally force their way in through boma gates to kill small stock. The gate is the weak point, merely a bush stuffed into an opening in the thornbush walls.

On the Laikipia group ranches, where we are experimenting with various simple alternatives, we have found that low cost solar-powered electric fences effectively exclude hyenas. Much cheaper and almost as effective, a solid gate can be constructed for a few dollars' worth of timber and sheet metal, or fabricated from branches at no cost. We are now working with the Laikipia Wildlife Forum and the Kenya Wildlife Service to have demonstration predator-proof bomas put up among all Laikipia Maasai communities.

Of course, some pastoralists are still nomadic, using several bomas in the course of a year, and thornbush is not always available. For these people, we also need to experiment with 'living bomas' – dense hedges of native bush species.

Most people in Africa hate hyenas, even though they take relatively small numbers of livestock, and even when such losses are easily prevented. Big cats kill many more livestock animals, yet many of the Maasai express admiration for them: beautiful blondes can always get away with murder.

Improved boma construction, while reducing depredation by hyenas, will also



EWALS File Picture

make livestock more secure against attack by lions. A resurgent lion population would be a great boon for tourism on the group ranches. Some group ranches have already set aside land for exclusive use by wildlife, and increased tourism would accelerate this process. Removing goats, meanwhile, has the huge added benefit of allowing grass on overgrazed rangeland to recover.

Some leopards occasionally become chronic livestock killers. Yet they are so agile it can be hard to prevent a determined leopard from getting into a boma. In recent years, people have become increasingly reluctant to kill cats, and so they often resort instead to translocating problem leopards (and lions) to national parks. Unfortunately, even 'humane' cage traps are very hard on the trapped animal – leopards very often break canine teeth and rip out claws trying to escape. Such an animal is then released in a foreign area, badly handicapped in its ability to feed and defend itself. And self-defence is critical, as predators are highly territorial and intolerant of strangers – a fact often ignored by the translocation practice.

Game wardens and conservationists tend to dump the caged animal and then go home with a fuzzy, warm feeling of having

**Ill-stared predators: Lions and hyenas that naturally wander outside secure parks and reserves are particularly vulnerable in that both kill livestock animals and so become the targets of revenge killings, often by spearing or the use of poison.**

'saved' a life, ignorant of the fact that the translocated leopard, lion, or hyena, is then persecuted by existing territory holders in the new area. It tries to find its way home, often killing livestock along the way. For chronic problem predators, it is far more humane to eliminate them outright than to kill them slowly through translocation. Moving predators works only if they can be released into an area that has no population of the same species, and where any new human neighbours will also tolerate them.

Although newly fenced reserves are springing up all over South Africa and are being stocked with translocated predators, there are no such predator-free protected areas in East Africa.

While it is not expensive to protect livestock properly from predators, bullets and poison will always be cheaper. Unless wild animals have a positive financial value, killing them is always going to be easier than living with them. How can we get local people to value the animals that eat their livestock (or, in the case of elephants, destroy their crops)? Should conservationists share the costs of tolerating predators and other problem animals? Due to cor-

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*Dr Laurence G Frank of the University of California, Berkeley, has been studying large predators in Kenya since 1971. He spent 20 years studying the behavioural ecology and endocrinology of the spotted hyena in the Maasai Mara. In 1997, he turned to conservation research in Laikipia, where he now directs the Laikipia Predator Project, a multidisciplinary study of the conservation biology and management of large African predators outside protected areas. He has a BA from Reed College in the US, an MSc from the University of Aberdeen, and a Ph.D from Berkeley.*

# The soul of the alpha predator

## MONSTER OF GOD

The Man-Eating Predator in the Jungles of History and the Mind

by David Quammen

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Reviewed by **Pamela S Turner**

ruption and abuse, financial compensation was abandoned years ago in Kenya, but in the Chyulu Hills Richard Bonham has devised a compensation system combining careful corroboration of claims with incentives for good livestock husbandry and protection of predators. Will this system reverse the decline in lion numbers? We shall know in a few years.

Can tourism alone pay the way for Africa's wildlife? Tourism is a notoriously fickle industry (witness all the recent warnings concerning travel to Kenya), and even at the best of times tourist numbers are limited, as indeed is the land area they require. Many of us find the thought of shooting a magnificent animal repulsive, but trophy hunters require vast areas of abundant wildlife and can bring enormous amounts of money into a local economy. They also seem less sensitive to political instability than ordinary tourists: tourism long ago collapsed in Zimbabwe, but sport hunting is still going strong.

Killing animals to save them seems counterintuitive, but it still takes a healthy productive population to produce a few large trophy male lions or elephants. Hunting was banned in Kenya 26 years ago, since which time the country's wildlife numbers have fallen by more than 50 %; indeed, wild animals have only nuisance value to all but the relatively few people who work in tourism.

Every year in Laikipia, many problem lions are shot and left to rot after killing cattle. These animals will die in any case, but trophy hunters would pay up to US\$ 30,000 apiece to shoot them. Should we charge hunters high prices to remove our problem predators? That sort of money would pay for a lot of dead cattle, and leave plenty over for conservation. Would such income lead local people to tolerate some loss of livestock, or would it just guarantee that every lion suddenly became a problem animal, resulting in destruction of the entire population?

Commercial hunting has triggered a resurgence of wildlife in South Africa and Namibia. And many of Zimbabwe's cattle ranches, too, were converted into hunting conservancies. Could high-priced hunting convince rural Kenyans to allow wildlife numbers to recover? Could a new government inheriting a forty-year legacy of corruption regulate a lucrative hunting industry enabling local people to benefit and wildlife populations to pick up? We cannot know until the experiment is tried. All we do know is that, right now, the animals are disappearing – fast. 

**O**ur fascination with animals capable of having us for lunch is the subject of David Quammen's new book, *Monster of God: The Man-Eating Predator in the Jungles of History and the Mind*. Despite its lurid title, there are no gruesome photographs or breathless accounts of men conquering vicious beasts. This is an elegantly crafted combination of history, biology, sociology, anthropology, and adventure that raises provocative questions.

Quammen draws on the Biblical story of Job and the Leviathan (the original 'monster of God'), the Beowulf saga, Paleolithic cave art and the movie *Aliens* to demonstrate the "psychological, mythic and spiritual dimensions" of alpha predators, which have always served to keep us "acutely aware of our membership within the natural world."

In other words, Quammen's book is about hunger: both the hunger of a predator for a kill and the hunger of the human spirit for communion with something greater – in the most primal sense – than ourselves.

Quammen is a superb science writer. He is the author of *The Song of the Dodo* (1996), a lucid explanation of conservation biology [reviewed in SWARA 23:2], and of three earlier collections of nature and science essays. *Monster of God* focuses on four man-eaters: Asiatic lions, Australian saltwater crocodiles, Romanian brown bears, and Siberian tigers.

"Dentition is destiny," Quammen writes, in launching into a discussion of carnivores' teeth and takedown strategies. For the record, great white sharks have 26 upper teeth and 24 lower, tigers

and lions deliver a suffocating bite to the throat, crocodiles use a 'death roll' to drown their victims, and scientists are still arguing over just how sabre-toothed cats actually used their sabre teeth.

Its meticulously researched science aside, *Monster of God* is laced with memorable travel tales. In India, a biologist tells of falling asleep while watching lions tear apart a deer; but instead of becoming their dessert, he is awakened by a cub innocently curled up on his legs.

Quammen runs into a bush-dwelling Australian taxidermist who pickles gamy crocodile heads (recipe included) for Hell's Angels. In Siberia, he joins a tiger stakeout using the remains of a biologist's dog as bait. (The carcass is booby-trapped with firecrackers to discourage the tiger from any further acts of Fidoicide.)

Quammen's focus on local people is this book's greatest strength. He asks Indian cattle-herders, Australian Aborigines, Romanian shepherds, and Russian trappers: How do you feel about man-eaters when you're the one who might get eaten? A twice-mauled

Indian insists,

"There's nothing wrong with the animal," while the mother of a crocodile's victim wails, "Who'll give me back my son?"

Throughout *Monster of God*, Quammen stresses that our planet's resident monsters are in serious trouble. He predicts that by 2150 all man-eating predators will have vanished from the wild, forced into oblivion by the juggernaut of human population growth.

His final point is poignant and sobering. Just as man-eaters are keystone species in their environment, serving a vital regulatory role by keeping prey species in check, he suggests they are also the keystone species of the human psyche. If the great predators vanish from the wilderness, the landscapes of our imaginations will be the poorer.

"A forest without bears," writes Quammen "is empty." For, by losing wild predators, we shall also be losing something of ourselves.

