GETTING ALONG WITH LIONS

It is important to devise ways to allow man and wildlife to coexist in Africa

— LAURENCE FRANK
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Lions (pages 36-37 and opposite, top) and other large predators routinely travel in and out of national parks and reserves. The WCS Laikipia Predator Project in Kenya is studying the behavior of predators and prey outside protected areas and how people interact with wildlife. Traditional Masai herders keep their livestock in bomas at night. Properly constructed bomas ensure that livestock are safe from lions.

As usual, the radio message comes early, as dawn reveals Mount Kenya dominating the southern horizon. Julius finds me nursing my second cup of coffee. "Laurence, one of your radio-collared lions has been shot on Ol Karisia Ranch," he reports.

The second dead lion this week. Via radio, the ranch manager tells me he lost five cows and a breeding bull to lions in two nights. He is apologetic but he had little choice. He "sat up" with the last cow that was killed and shot one member of the pride that came back to feed. It is Lion Female 35, a young adult he and I had collared just last month.

With my assistant Stephen Ekwanga, I drive two hours over appalling dirt roads to collect the lion's remains. We have not learned much about her in only a month, but a postmortem exam will yield information on her nutritional and reproductive condition, her health and genetic relationship to other lions in the area, and the diseases she encountered, including Feline Immunodeficiency Virus, a close relative of HIV. Valuable data, but not what we had hoped to learn about LF35 and her pride.

Conservationists have long been alarmed about the rapid declines in African elephants, rhinos, and gorillas. Yet, plummeting populations of other wildlife have gone almost unnoticed. Under pressure from growing human and livestock populations, wildlife outside Kenya's national parks is disappearing quickly. The great predators—lions, hyenas, cheetahs, and wild dogs—are particularly threatened, for they kill livestock and no stockman will tolerate that, whether he is a traditional pastoralist or a commercial rancher. There are probably fewer than 25,000 wild lions in Africa, and most of those are in protected areas.

It took Europeans millennia to eradicate that continent's lions, bears, and wolves, a couple of centuries to clear eastern North America, and a few decades to wipe out wolves and grizzlies in the American West. Africa is the last stronghold of large terrestrial mammal abundance and diversity. People can still visit most national parks in eastern and southern Africa to see lions and other predators, as well as the herds of antelope they feed upon. But drive to the edge of most protected areas, and the landscape changes abruptly, either to farmland that supports multitudes of humans, or barren rangeland overgrazed by cattle, goats, and sheep. Predators that leave the safety of the parks rarely last long before they are shot, poisoned, or caught in poachers' snares.

Most large predators, in fact, travel so widely that few national parks are large enough to truly protect them. The research of my colleague Rosie Woodroffe has shown that the majority of predators range across park boundaries and die at the hands of humans. Conservation biologists typically worry about the harmful effects of small population size, such as inbreeding depression, loss of genetic diversity, and disease outbreaks. These can be important. Ten years ago, a third of the Serengeti lion population died from distemper. Bullets and poisons, however, pose much more immediate threats to lions and other predators. Parks are usually small and widely separated by human-dominated landscapes where predators cannot survive. Without the ability to move between and among parks and reserves, most predator populations will suffer genetic problems within a few generations.

With support from WCS for the Laikipia Predator Project in Kenya, we are studying the behavioral biology of unprotected African predators, and developing ways for humans and livestock to coexist with them. Over the past 40 years, biologists have learned a great deal about predators living under natural conditions in parks. Now, however, we find ourselves trying to conserve and manage populations that are massively affected by human activities. We know that persecuted animals are less abundant, warier, and more nocturnal than protected ones, but what are the subtler influences of persecution?

Lions, hyenas, and wild dogs are intensely social. The group is probably the single most important aspect of an individual's environment. If close family relationships are central to the social system, what happens when 20 to 30 percent of the population is shot annually? Are critical kin relationships so disrupted that breeding, hunting, and territorial defense are compromised? When new male lions take over a pride of females, they typically kill small cubs, bringing the females into heat in a matter of weeks. Can a lion population maintain itself if males are shot so often that new ones are regularly wiping out litters? Can a female still raise a litter if her sister, and hunting partner, is killed? How old must cubs be to survive the loss of their mother?

Because the Laikipia lions are wary and nocturnal, we cannot observe them from vehicles, as we would in a park. Rather, we depend on using radio collars and plotting the lions' movements during biweekly tracking flights. Even collaring these lions is not straightforward. In a park, animals are accustomed to vehicles. A biologist can just drive up and dart the animals. In Laikipia, the lions are far too shy for that, so we set foot snares at lion kills and capture the cats when they return to feed on the leftovers. After collaring an anesthetized animal, we take blood samples for health and genetic analyses and release it.

To date, we have handled 92 lions, of which 72 have been fitted with radio collars. We have captured 25 leopards—usually livestock killers caught in traps by ranchers, which we release after sampling—and 73 spotted hyenas. In addition, graduate student Aaron Wagner has captured more than 50 striped hyenas. Though they occur at low density in much of Africa and Asia, striped hyenas are probably the least known large carnivores in the world, and this is the first major study of this species.

Radio collars provide location information, but they cannot give us essential social data. Do the beeps we are tracking from the air represent only Lion Male 88, or a pride of ten? When captured two years ago, LF5 had swollen teats. Did her litter survive to breeding age? LF11's collar has died, but is she still with her group? In the dense bush and steep escarpments of Laikipia, the only way to get details such as these is to track the animals on foot. Stephen and I have become adept at sneaking up on lions asleep in thickets, hoping to count them and slip off into the bush before they detect us.

Currently, lions are doing well on the commercial ranches, where a certain level of livestock depredation is tolerated as a cost of doing business—in stark contrast to the attitudes on rangelands in the United States. In the huge Yellowstone region, for example, perhaps a dozen cattle are killed by wolves annually; yet most ranchers are vehemently anti-wolf. In Laikipia, the average ranch loses at least that many cattle to lions every year (one lost 89 in 2001), yet the Laikipia ranchers do not "sit up" to catch an offender until it has killed livestock several times in succession. Here, people are willing to forfeit some profit for the privilege of living with wildness.

Lions avoid the communal lands,

LAIKIPIA

An Exceptional Conservation Success Story

Lying just north of Mount Kenya National Park and southwest of Samburu National Reserve, Laikipia District is a vital area for wildlife conservation. Unlike most of eastern Africa, wildlife populations are actually increasing here—thanks to a strongly pro-conservation human population whose economy combines livestock production with ecotourism.

Like much of Africa, this is semi-arid bush country. Most of it is too dry for agriculture, so only livestock production and tourism are viable economic pursuits. Herds of cattle, goats, and camels forage among elephants, zebras, giraffes, and antelope. All are prey for lions, leopards, cheetahs, hyenas, and wild dogs.

Thirty years ago, there were no elephants, few ungulates, and predators were shot on sight in Laikipia. Wildlife has rebounded because people recognize that tourism and conservation can provide a better livelihood than livestock alone. This makes Laikipia a "laboratory" in which to learn how humans and livestock can live in some sort of coexistence with African predators.

At 2.3 million acres, Laikipia is a microcosm of typical land-use in semi-arid Africa—a mix of pastoralism, commercial ranching, and increasing ecotourism. Land is not formally protected, but most landowners, both traditional Masai and commercial ranchers, are committed to conserving the ecosystem while developing a sustainable rural economy. The Laikipia Wildlife Forum, a remarkably democratic grassroots organization, is devoted to improving the livelihood of the people through conservation.

Many commercial ranches are turning to ecotourism and helping their pastoralist neighbors start lodges, campsites, and camel or hiking safaris. The Masai are eager to develop alternatives to their tough subsistence herding. Although range conditions and wildlife numbers are good on the commercial ranches, the overgrazed communal lands support little wildlife. The Forum employs local community liaison officers (CLOs) to assist their communities in encouraging wildlife and developing conservation-based enterprises. As loss of livestock to predators is the single most important wildlife problem, the CLOs receive significant WCS financial and technical support through the Laikipia Predator and Samburu-Laikipia Wild Dog projects.

The semi-arid ecosystem of northern Kenya extends into Uganda, the Sudan, Ethiopia, and Somalia. This huge region was once rich in wildlife, but overgrazing, poisons, and the ubiquitous AK-47 have all but eliminated large mammals. On the southern boundary, Laikipia stands out as the exception—an example of what conservation can do for people, and a most important potential source of wildlife to repopulate the vast north if human pressures can be brought under control.

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with their high human and livestock densities, low wildlife numbers, and frequent use of poisons to eliminate predators that kill stock. In the absence of lions, predation by hyenas and leopards poses the major wildlife conflict problem for pastoralists. Yet, the Masai, too, are willing to tolerate predators if stock losses can be kept low, especially now that income from wildlife tourism is improving their lives.

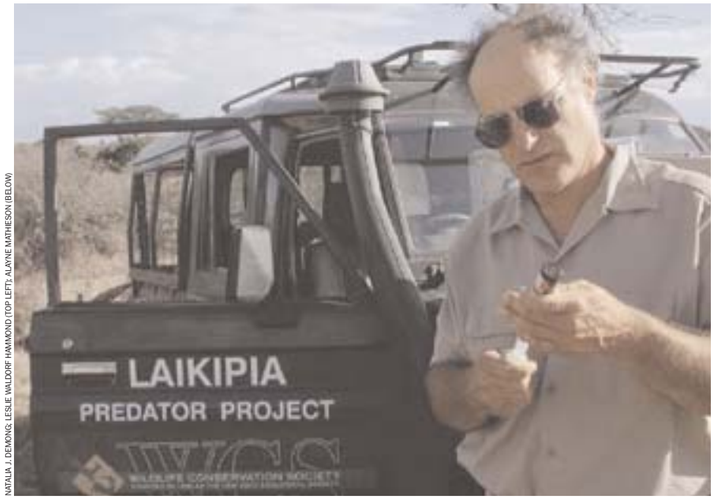
Understanding the ecology and behavior of persecuted predators is only part of our effort. More important are human behaviors and beliefs, and devising ways to allow man and wildlife to coexist—a goal more attainable in Africa than in North America, where livestock roam freely in a landscape mainly devoid of large predators. Over the millennia, African pastoralists such as Masai, Samburu, and Turkana developed management practices to protect their animals from predators and human raiders. By day, young men closely tend the herds; at night, livestock are brought to *bomas*, thornbush stockades that keep the animals from wandering in the dark.

Cattle panic when they smell lions, however, and become easy prey when they stampede through the boma walls. If a boma is well built, it keeps hyenas out and livestock in. We are working with both commercial ranchers and traditional pastoralists to develop affordable improvements in boma design. A round boma, for example, prevents deaths because panicked cattle cannot pile up in corners and crush one another, or burst through the walls. Interior divisions and stronger gates help contain livestock. In areas without abundant bush, we are experimenting with stone walls and cheap electric fences to exclude hyenas. Better yet would be "living" bomas, dense hedges of native acacia. Dogs provide an excellent early warning system, alerting men asleep in their huts when predators are prowling the perimeter. But dogs can be a mixed blessing. If not properly vaccinated, they can spread canine distemper and rabies to wild dogs and other wildlife.

Diligent herding is also vital. Overlooked animals left outside the boma at night usually become prey before dawn. Pastoralists who herd their own animals very rarely miss strays. The same people herding for low wages on commercial ranches, however, are not always so diligent, and livestock are sometimes left out and killed by hyenas and lions. Ranches that reward good herding practices suffer much lower losses than those that do not. But things are changing, even in the traditional lands. Young men tend to drift off to the attractions of towns, leaving the herding to small children less able to control the animals and frighten away predators. In more affluent countries such as Botswana, stock are barely herded and confined at night any more, resulting in ever increasing problems with predators.

Solving human social issues is a much greater challenge than simply studying wildlife. As Africa develops and more people leave the difficult pastoral life, eventually the vast, dry, overgrazed areas will probably revert to wildlife. Our mission is to ensure that there are still great predators to repopulate these regions whenever humans permit.

Laurence Frank has been studying carnivores in Kenya for WCS for five years. To learn more about the Laikipia Predator Project, log on to www.laikipia.org.



The Laikipia lions are too wary for scientists to observe them from vehicles, as they would in a national park, so the team traps and radio collars the animals (right, the author prepares a tranquilizer dart to use during collaring). As Africans abandon traditional pastoralism, there may be more space for lions (below and opposite) and their prey—if these wild animals still exist.

NATALIA J. DEMONG; LESLIE WALDORF HAMMOND (TOP LEFT); ALAYNE MATHESON (BELOW)