

# Field Notes

MARK CHERRINGTON

## In the Crosshairs

*Zimbabwe has declared war on poachers to save the rhinoceros from extermination.  
But low-tech science may accomplish just as much*

IT WAS SUICIDE SEASON—THE half-joking name Zimbabweans use to describe the searing heat of October—and at ten o'clock in the morning the *bushveldt* was well on its way to another blistering day. Sky Alibhai, an ecologist at the University of London, whispered in my ear: "Be absolutely quiet." He waved a radio antenna gently over his head and concentrated on the beeps we could now hear coming through his earphone. Another soft whisper: "He's only about a hundred meters ahead." The five of us crept forward, carefully avoiding the dried leaves and twigs on the sandy ground. We peered through the tangle of bare tree trunks and prickly brush, hoping to see our quarry before it saw us. Somewhere to our right, a lion roared. The game scout at the front of our line kicked up some dust to make sure we were downwind, then lowered his assault rifle from his shoulder, cradling it ready in his hands.

Alibhai suddenly froze, dropping to a crouch and pointing through the trees ahead. We saw nothing. Then, like Lewis Carroll's disappearing Cheshire cat in reverse, a great mass coalesced out of the confusion of vegetation, and we saw him: a large male black rhinoceros, about forty meters away, resting at the foot of a tree, wearing a thick leather collar with a radio transmitter attached. We all dropped to our knees, unpacked our equipment, pulled out our binoculars and began taking notes on the animal—its identity, its behavior, its condition.

Alibhai, meanwhile, was still fiddling with the antenna and the receiver slung around his neck. "I'm getting another signal," he whispered. "Number thirty-five, over there, about 500 meters, with her calf." Then, a moment later, facing a slightly different direction, he picked up yet another signal, also close by. Black rhinoceroses are usually solitary animals—but then, inconceivably, we saw two more rhinoceroses, without collars, moving toward us from still another direction: a



Olivia Parker, Snow Globe—Rhino, 1996

total of six very large and potentially ill-tempered animals within charging distance.

Alibhai turned to us and whispered: "Find a sturdy tree and climb it."

BUT WE HAD NOT COME INTO RHINOCEROS country to avoid rhinoceroses. As soon as the sextet had dispersed, we climbed down and went back to our work: trying to help save the animals from extinction. And they desperately need saving. The six animals we had just encountered—what ought to have been a trifling number in the vast African habitat—represented a whopping 0.25 percent of all the wild black rhinoceroses left on earth.

Besides the black rhinoceros, four other rhinoceros species are known, all endangered. Heroic conservation efforts have recently saved Africa's white rhinoceros from the brink of extinction. The Indian rhinoceros, which roams through Nepal and northern India, numbers about 2,000 animals. The Javan rhinoceros and the Sumatran rhinoceros, rain-forest dwellers that were never numerous, have practically disappeared: fewer than 400 Sumatran rhinoceroses and no more than seventy Javan rhinoceroses remain.

Even as I watched the black rhinoceroses from the safety of a tree, I was struck by the contrast between the impotence of our po-

sition and the urgency of our mission. We could almost sense the population of those magnificent animals ticking downward with clocklike precision. In 1900 a million black rhinoceroses lived in Africa. By 1970 the number had fallen to 65,000; in 1980, 15,000; in 1985, 4,500. Today, about 2,400 remain. In Zimbabwe the crisis has been particularly acute. In 1990 the country was thought to be home to the largest population of black rhinoceroses in Africa: roughly 1,700 animals. Last year Zimbabwe was down to 324.

The declines since 1970 are almost entirely the result of poaching and the international trade in wildlife parts. That makes it tempting for us in the West to blame the problem on what we see as the superstitions of foreigners. It is true that Asian medicine is the primary force driving market demand. In Asian countries rhinoceros horn is used to treat a number of conditions, from fever to laryngitis to lumbago. And some recent studies by Western investigators suggest the treatment can be effective for some conditions, if the doses are large enough. In any event, the horns of all five species command astronomical prices. Indian rhinoceros horn can fetch \$45,000 a kilo in Taipei; the horn of the animal we had been tracking could bring \$12,000 a kilo, roughly the price of gold.

But Asians have been using rhinoceros horn for 2,000 years; the dramatic declines in rhinoceros populations are recent. It may come as a rude surprise that the current crisis should be laid in part at Western feet: black rhinoceroses might not be endangered today if not for the West's love affair with the automobile.

IT BEGAN IN THE 1970S, DURING THE Arab oil embargo. The artificial shortage led to a dramatic rise in the price of crude oil, and with it, incomes rose in oil-producing countries. One country that profited handsomely was Yemen. A million Yemenis scattered abroad to work in Saudi Arabia and other oil-rich Arab countries, sending home roughly \$1 billion in



earnings to their formerly impoverished homeland. That newfound wealth created an enormous demand for an unusual kind of luxury product.

For centuries, one of the rites of passage for young Yemeni men has been to receive an elaborate ceremonial dagger, known as a *jambiya*. The most prestigious and expensive *jambiya* handle is made of rhinoceros horn. In the days of poverty before the oil crisis, most Yemenis could not afford such rare daggers. With the influx of new money, however, demand and prices skyrocketed, giving poachers a major incentive to flout the law and kill rhinoceroses.

As the killing reduced supply, prices rose even more, which further increased poaching, and so on in a vicious spiral that has given rise to the current crisis. In the 1970s alone, 50 percent of the world's rhinoceroses were killed by poachers. In Kenya, Tanzania and Zambia the toll in those years was closer to 90 percent. Then, as the northern regions became depleted, the poachers moved south until they reached Zimbabwe in the mid-1980s. The demand in Yemen tapered off in the late 1980s, in part perhaps because of government bans on horn imports, but mostly because of a declining Yemeni economy. Now, ominously, demand appears to be resurging once again, though it is encouraging that last August Yemen finally became a party to the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES). Meanwhile, the wider Asian trade in rhinoceros horn has continued, because the bans that have been legislated in mainland China, South Korea and Tai-

wan have not been effectively enforced.

**S**KY ALIBHAI IS WORKING in the heart of the killing zone, in Hwange National Park in northwest Zimbabwe, seeking to reverse the trend. His work is the result of a partnership between the Zimbabwean Department of National Parks and Wild Life Management, and Earthwatch, a Watertown, Massachusetts-based nonprofit organization that provides funding and lay volunteers to help conduct research. Alibhai is a man of forty-six, Ugandan by birth, Indian by ancestry and British by nationality. He may be

the only scientist in the world who received his undergraduate degree from the Idi Amin regime and his doctorate from the University of Oxford.

A dark, handsome man with a refined British accent, Alibhai has the sharp features and intense focus of a raptor and the grace of an athlete (tennis is his other passion). For all his sensible caution in approaching a rhinoceros, and despite his nearly deadly encounters with poachers, he shows no trace of fear when working in the bush. On the morning we faced six rhinoceroses, while the rest of us scampered up trees, Alibhai (and our armed game scout) remained on the ground, fascinated, as though there were no danger at all. "I

think it's sort of like flying," he says. "If you begin to rationalize the possibilities of what might happen to you, you would very soon stop flying."

His wife and coworker, Zoë Jewell, is a veterinarian by training and a computer maven by inclination. The Zimbabweans call her *Masvanda*, which means "lioness," partly because of her mane of blond hair and partly because of her cheerful take-charge attitude in any circumstance.

The work of Alibhai, Jewell and their colleagues is part of Africa's most ambitious plan to protect the black rhinoceros. Known as Operation Stronghold, the plan is a last-ditch effort, a way of circling the wagons. It began in 1985 with the deployment of armed antipoaching squads, then was refocused in 1993, when the government recognized that by trying to protect all its rhinoceroses it was spreading its resources too thin. Instead, four so-called intensive protection zones (IPZs) were created and strategically emplaced along the country's borders.

Why station antipoaching forces near borders? Poachers who strike along borders can take their horn and then quickly escape into another jurisdiction. The spindly, thorny tree in which I was perched that day is only about twenty miles from the borders of Zambia, Botswana and Namibia. As I looked out over the surrounding countryside and the flat-topped hills in the distance, and then at the armed game scout below us, I reflected that without our presence, poachers

could shoot and butcher one of the rhinoceroses below me and cross safely out of Zimbabwe in a matter of hours.

Such tactics work well because wildlife conservation in southern Africa tends to be a proprietary affair: without any economic stake in preserving the wildlife or any say

in its management, local people have no interest in stopping poachers from killing the animals. But local people can also make an extremely effective antipoaching force. In one pilot program in southern Zambia the government began to transfer part of the licensing fees it collects from safari hunters to villages in a game park. Poachers were immediately seen as taking money out of real people's pockets, and poaching dropped by more than 90 percent. National sovereignty represents the same proprietary principles writ large, making border raids a natural tactic for poachers—and border-situated IPZs well-placed to stop them.

Each IPZ is prime habitat for black rhi-

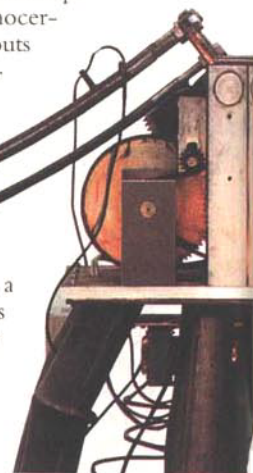
## OIL MONEY GAVE POACHERS a strong incentive

noceroses, with areas of thick vegetation and lots of browse. The original plan for each zone called for rhinoceroses to be dehorned by wildlife managers; fitted with radio collars for tracking purposes; and monitored by armed game scouts who have orders to shoot on sight any unauthorized person in the zone. And shoot they do. Between 1985 and 1995 game scouts killed 178 poachers. The poachers, for their part, have killed seven game scouts.

**T**HE DEHORNING PROGRAM IS PERHAPS the most controversial part of Operation Stronghold. No one knows with any certainty whether cutting off a rhinoceros's horn affects its behavior or survival. Some research has suggested that dehorned females cannot defend their calves, but other research has found no effect at all. Even as a deterrent to poaching, however, dehorning is open to question. There is a major blood supply at the base of the horn, so wildlife managers have to leave a stump about six inches high. Some poachers have killed a rhinoceros just to dig out the stump.

Radio collaring, too, is problematic. The collars are important tools in the hands of wildlife managers for keeping track of individual rhinoceroses and assigning game scouts to them. But those advantages come at a price. To be fitted with a radio

collar, a rhinoceros has to be located, usually by helicopter or small plane, then chased, sometimes for four or five kilometers, until a marksman can get a clear shot with a hypoder-



Rebecca Hom, Kiss of the



mic dart. Once the animal is immobilized, a group of eight to ten workers can move in and fit it with a radio collar. Finally, the rhinoceros is revived with an antidote and sent on its way.

The experience is traumatic: rhinoceroses that have been through it often bolt in panic at the mere sound of a plane engine. Some recent studies suggest that radio collaring can reduce a female rhinoceros's fertility, and it can also cause pregnant females to abort their fetuses. It can even be lethal. The temperature-regulation system of a rhinoceros is impaired by anesthesia. On the day I spent tracking with Alibhai the temperature reached 130 degrees Fahrenheit, and in such con-

## to flout the law and kill rhinoceroses.

ditions a large anesthetized animal can readily overheat. Sometimes adult rhinoceroses die from the stress.

Then there is the antidote, necessarily fast-acting so that wildlife managers can move on quickly and still have some assurance that the animal has safely revived. But revivals can be illusory; the antidote can wear off before the slower-acting anesthetic has been fully neutralized. Hence the rhinoceros may appear to revive, scattering the wildlife workers, only to collapse again, this time with no one around to protect it. A semiconscious rhinoceros can readily be killed by lions or hyenas. The net effect in some parts of Africa is a mortality rate as high as 10 percent from radio collaring alone.

Finally, radio collaring is expensive: transmitters, helicopters, trucks and the time of experts cost about \$1,500 an animal, repeated every year or so when the collar's battery wears out or the collar falls off. The receiver, which can monitor five or six animals, runs another \$3,500.

**A**LIBHAI HAS RECENTLY FOUND A WAY to track rhinoceroses effectively without the expense and risk of collaring: he uses their footprints. He and his colleagues have discovered that rhinoceros footprints are as distinctive as human fingerprints in shape, proportions and markings. The identification system begins with a game scout who encounters

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t r a c k s o n

his daily rounds. The scout makes a photograph of the imprint of the left hind foot (the prints of the front feet are obliterated by the rear feet when the animal walks; the

left side was chosen for standardization). The scout then records a large amount of information, all of which can be gleaned from the track alone: the size and sex of the rhinoceros, the direction of travel, the time elapsed since the track was made, and so forth.

When the scout returns to camp, the track photograph is scanned into a computer and analyzed. The system measures thirty-six parameters of the footprint—distance between the toes, proportions of the foot, shape of the footpad and the like—almost always enough to identify the rhinoceros to which the track belongs. Like radio collaring, the footprint identification system requires an initial investment, in computer equipment and in training for staff. As Alibhai points out, however, those are one-time expenses, so in only a few years the total costs will turn out to be far lower than those of radio collaring. "The crucial thing," says Jewell, "is that it optimizes the use of local expertise. So it's appropriate technology for developing countries." Most important of all, the approach is entirely noninvasive.

Of course, to implement a footprint tracking system, you first have to build a database that stores information about the tracks of all the rhinoceroses you want to monitor. And that means you have to go out and catch each rhinoceros in the act of making a track so that you can match later tracks to the animal that made them. That was our goal with Alibhai that hot October morning.

**T**HE MOST CONTENTIOUS PROPOSAL for saving rhinoceroses from extinction is to farm them. Because rhinoceros horns regrow in about two years, a number of wildlife managers in southern Africa suggest that with a change in the law, horns could be harvested and sold legally to Asians and Yemenis. The resultant income could be used to protect more rhinoceroses—and on a sustainable basis. For example, in Hwange National Park alone, the government dehorning program generated 528 pounds of horn in 1991. Zimbabwe now holds at least \$10 million worth of horn in stockpiles, enough to run all of the country's wildlife programs for ten years.

Opponents argue that a legal market in rhinoceros horn would only ensure the survival of the black market and

increase poaching. And even its proponents admit it is an extreme strategy, given the costs and dangers of dehorning a live rhinoceros, and it reflects the extreme state of affairs for the black rhinoceros.

As I watched our six rhinoceroses slowly disperse into the bush that morning, I thought about the odds these magnificent creatures face, and I wondered how many of them would still be alive in a few years' time. By then the lions in the distance had made their kill and moved on, and all that was left of the six rhinoceroses was some trampled bushes, some chewed branches and a lot of footprints. We quickly turned to the prosaic work of finding, photographing and tracing those and other footprints, mapping their positions and collecting samples of the plants that serve as rhinoceros food. In the wake of their rare and wonderful gathering and in the face of the war being waged against them, it was hard not to feel as though our work, however well-intentioned, was an impossibly small effort—like trying to stop a plague of locusts with a bug bomb.

**B**UT TODAY, TWO AND A HALF years later, it looks as if the locusts have at least been slowed. Since the IPZs of Operation Stronghold were set up and this research began, not a single rhinoceros has been poached in Zimbabwe. Alibhai's database is finished, the game scouts are patrolling with cameras, the footprint technique is in active use in Hwange National Park, and the government of Namibia has asked Alibhai and Jewell to initiate a footprint tracking system there.

As for the criticism that their efforts are too small and too localized to make any real difference in the global rhinoceros emergency, Alibhai responds: "Rather than getting hung up on what I would call these shotgun scenarios, trying to save species with global survival strategies, what we need to do is have people concentrate on the survival of whatever small populations they happen to study." In other words, local efforts are the only efforts

that will  
make a differ-  
ence.

And all six of the  
rhinoceroses I saw that  
extraordinary day in suicide  
season are still alive. ●

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Rhinoceros, 1989