

Halting the rhino's demise

Sanctuaries and captive breeding programs must counter habitat loss and the rhinoceros-horn trade.

David Western's Land Rover bumped and bounced as he raced over the uneven ground in Kenya's Tsavo National Park in East Africa. His destination was clearly marked by the circling vultures ahead. As Western drew closer, he spotted the object of the vultures' and his interest. A dead black rhinoceros, pools of blood drying around the carcass, lay where the broken woodland gently gave way to more open savannah.

This rhino died no natural death. It had been shot by poachers, who then cut off its magnificent horns to be made into dagger handles for sale in the Middle East. Nor was the rhino's death unusual. Such deaths have become commonplace throughout Africa and, to a lesser extent, Asia in recent years. "The black rhino will be extinct in the wild in five years unless we can halt its population decline," says Western, director of the New York Zoological Society's Wildlife Conservation International in the Bronx, New York, and chairman of the African elephant and rhino specialist group in the Gland, Switzerland-based International Union for Conservation of Nature and Natural Resources (IUCN).

Conservationists around the world have joined in an unprecedented eleventh-hour fight to save not just the black but all rhinos. Be it a poacher's gun, a farmer's plow, or a logger's bulldozer and saw, the second-largest land mammal faces a hostile world in which its continued survival in the wild is in doubt. But conservation efforts, albeit still in their early stages, are yielding results that give renewed hope for the rhinos' survival.

A rhino census

There are five living rhino species, two in Africa and three in Asia. The largest rhino and the one most often seen in zoos is the white. Its name refers not to the animal's color, more a light gray than white, but to its mouth. Derived from the Boer word *weit*, the name describes the rhino's wide lips, which it uses to graze Africa's dry grasslands. The white rhino's natural range is south of the Zambezi River, which divides Zimbabwe and Zambia, and farther north, west of the Nile.

The black rhino, actually more dark gray than black, was once Africa's most numerous and widespread rhino. Numbering hundreds of thousands before European settlers arrived, it ranged in a broad arc from West Africa's mountain rain forests through Somalia's dry scrubland to the savannahs and deserts of East and South Africa and now survives only in pockets of its former range. A browser, the black rhino uses its prehensile upper lip to pull leaves from bushes and low branches. Both white and black rhinos have two horns.

Perhaps the strangest in appearance is the Indian, or greater one-horned, rhino. Inch-thick hide, deep skin folds, and rivet-like tubercles or bumps make the Indian rhino look like a prehistoric beast. It grazes the tall grasses and thick woodlands near lush rivers, dank marshes, and broad floodplains in India, Nepal, and Bhutan.

If the Indian rhino looks ancient, the Sumatran truly is. The Sumatran, or Asian two-horned, rhino differs little from those of the Tertiary era when rhinos were more common than today. The smallest and hairiest of

living rhinos, the Sumatran is also related to the woolly rhinoceroses that roamed the frozen Eurasian plains until about 11,000 years ago. Unlike its extinct cousins, however, the Asian two-horned rhino prefers the humid rain forests of Malaya, Borneo, Sumatra, and Sarawak.

Least well-known is the Javan, or lesser one-horned, rhino. Once widespread from eastern India to Vietnam and south through Malaya and Indonesia, the lesser one-horned is now found only in far-western Java. There, living in thick rain forests, it is rarely seen, little photographed, and largely unstudied. It is the only living rhino that cannot be seen in a zoo.

Together, there are probably no more than 11,000 wild rhinos, possibly less. The black rhino, which still numbered 60,000 in 1970, fell to 15,000 by 1980 and 3500 today. The white rhino, one of the few conservation success stories to date, counts about 5000. The Indian rhino adds between 1200 and 1500, and the Sumatran numbers in the 500-900 range. About 50 Javan rhinos remain.

In India, where rhino numbers fell long before those in Africa, habitat loss has led to the species' decline, says Eric Dinerstein, a wildlife biologist with the World Wildlife Fund and Smithsonian Institution in Washington, DC. Burgeoning human populations crowded rhinos out of all but the most remote, least habitable, and densest forests by 1900. With the conquest of malaria in northern India and Nepal in the 1950s, even more prime rhino habitat was opened to human settlement.

In Malaysia and Indonesia, forests inhabited by Sumatran rhinos are rapidly being cleared, leaving scattered groups in small, remnant forests.

By Jeffrey P. Cohn

islands where they are subject to poaching. Yet disappearing forests alone need not be disastrous for rhinos, Dinerstein says. "Rhinos can survive in some secondary forests near traditional farms, but not in the oil palm and rubber plantations that are everywhere [in Asia] replacing rain forests," he explains.

The rhino's plight in Africa has little to do with habitat loss. Instead, the rhino's horn has been its downfall. "There is still plenty of good habitat available throughout most of the rhino's former range," David Western says. Rhino habitat in Africa has been lost at a rate of only 1% per year, according to Western, but rhinos are disappearing at a rate of 20-25%.

On-the-spot surveys by Esmond Bradley Martin, who advises IUCN and other conservation groups, found a single rhino horn in 1985 sold for about \$3000 in North Yemen, where it is made into handles for fancy daggers called *jambias*. More recent figures indicate the price could be 50% higher. Water buffalo and some antelope horns could be used, Western says, but their quality is not as good. With their oil-derived incomes, most Yemeni men can afford expensive daggers.

In Asia, most rhino horn is ground into a powder that is sold by traditional pharmacists to relieve headaches, liver ailments, and heart problems. The powder is also used as a skin ointment and, less commonly, an aphrodisiac. Modern science confirms the effectiveness of none of these uses; nevertheless, Asian rhino horn, the most prized, goes for about \$13,000 per pound retail in Taiwan and African horn for \$5000 per pound in Singapore.

Sanctuary systems

In the face of such prices, hopes for the rhino's continued survival rest on steps being taken by private and government conservationists on four continents. Although not always well coordinated, their efforts are aimed at



Rhino-mynah symbiosis: mynah birds eat ticks and other parasites from the rhino's hide. Photo: Carol Loraine Price.

protecting rhinos from further poaching, relocating some and rescuing others, while increasing wild populations and building up captive breeding programs for all species.

The most ambitious project involves creating protected sanctuaries for black and, to a lesser extent, white

rhinos in Africa, especially Kenya. Fences have been erected around some Kenyan national parks, extra guards hired, and radio-equipped vehicles bought to protect rhinos from poachers. So far it has worked, Western says, with rhino numbers growing in each sanctuary.



Two of Africa's remaining 3500 black rhinos, which have been particularly hard hit by poachers since the 1970s. Photo: Hans Reinhard/Bruce Coleman, Inc., courtesy New York Zoological Society.

Some sanctuaries predate the recent rhino slaughter and the official government sanctuary system. The first was Nairobi, a small national park just south of the Kenyan capitol. The park is close to conservation-minded urbanites and readily available to tourists, Western says, so poachers stay away. The park's population of 29 introduced black rhinos has increased to about 40 since the late 1960s.

Another sanctuary, created at Solio, a private ranch, was Kenya's first completely fenced sanctuary. From about two dozen black rhinos moved to Solio since the late 1960s, the ranch's herd now numbers approximately 100. The idea has spread to other private ranches, such as Lewa Downs in Kenya's north, which has 14 black rhinos. Western says the rhinos on private ranches are increasing their numbers by 10% a year.

Based on the Nairobi and Solio examples, the Kenyan government recently built a 9-foot-high fence around the entire 180-square-kilometer Nakuru National Park. Seven-

teen black rhinos, taken from Solio, were moved to the park in 1987, joining two others already inside. No rhinos have been poached at Nakuru since the fence was completed, Western says, and at least one birth has been recorded.

Meanwhile, a smaller fenced sanctuary was created in Kenya's Tsavo National Park in 1987. Five of the park's estimated remaining 150 black rhinos—down from perhaps 9000 in 1970—lived in the four-square-kilometer refuge. In just one year the number of protected rhinos has risen to eight, Western says. The fenced area has been expanded to 25 square kilometers, and plans are to add more rhinos.

Yet another fenced sanctuary is planned for Aberdares National Park in Kenya's forested highlands. No one knows how many black rhinos remain in heavily poached Aberdares. Aerial surveys have found 35, but Rick Weyerhaeuser, director of the World Wildlife Fund's African programs, thinks there may be more. An electrified fence is planned for an area

of the park vulnerable to poaching because of human settlements nearby.

The sanctuary approach will be tried in other African countries including, possibly, Tanzania, which has been subject to years of heavy poaching. A sanctuary already exists on Rubondo Island in Lake Victoria, and a second may be created at Ngorongoro Crater, which has only 20 black rhinos left. Ngorongoro cannot be fenced, Western adds, but greater antipoaching efforts can probably protect rhinos there. In a similar case, expanded surveillance squads, sometimes with guards assigned to protect individual animals, have allowed black rhinos in Kenya's unfenced Masai-Mara National Reserve to increase from 14 to 21 since 1985.

A more likely spot for sanctuaries is Zimbabwe, where Western says an all-out "war, not just a conservation effort," is being waged in the Zambezi Valley to protect the largest remaining population of wild black rhinos. Several dozen poachers have been killed or wounded in gun battles with park rangers already. But since the area's size and openness make antipoaching efforts difficult, hopes of preserving Zimbabwe's rhinos may lie in sanctuaries as well. In fact, Weyerhaeuser says, more than 50 black rhinos have been captured in the Zambezi Valley and moved to more secure national parks and private ranches elsewhere in Zimbabwe. A half dozen other black rhinos have been sent to Swaziland in southern Africa, where the species was exterminated not long after white settlers arrived.

Western hopes that, by protecting Africa's few remaining black rhinos in sanctuaries, demand for their horn will fade. "I don't think rhinos can survive outside sanctuaries for now," he says. "But if we can protect them, the market for rhino horn might collapse in 10 or 15 years. Then we could expand the rhino range outside the sanctuaries and maybe eventually outside the parks as their populations increase naturally."

Toward that end, IUCN and other

conservation groups are stepping up political pressure on African nations to halt the rhino-horn trade. Nearly all countries ban exports, but many officials can be bribed to use diplomatic pouches or other means to smuggle horns. Pressure will also be put on the United Arab Emirates, the only country so far to drop out of CITES (the Convention on International Trade in Endangered Species of Wild Fauna and Flora), to cease acting as the major transit point in the Middle East for rhino horn.

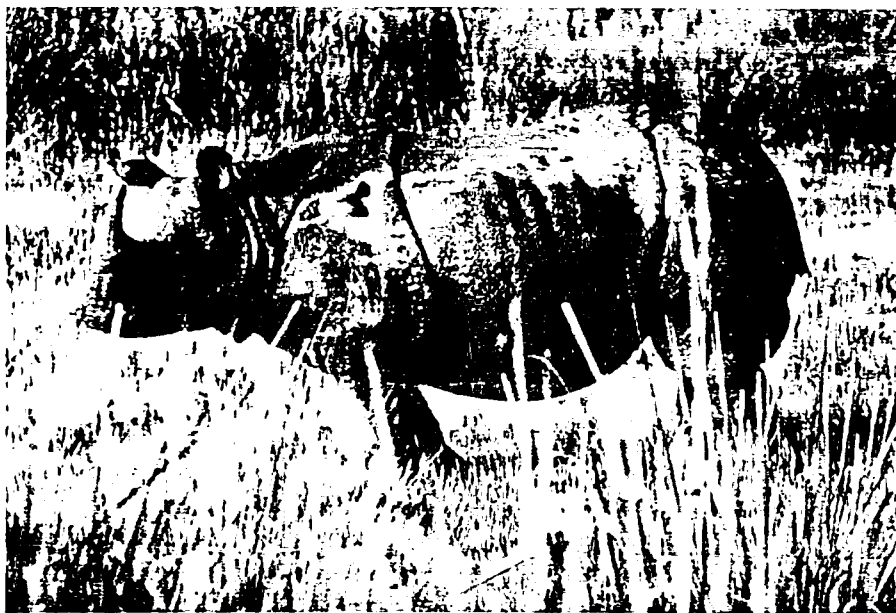
Captive breeding

Meanwhile, additional efforts are being directed at Africa's two most endangered rhino groups. One is a western subspecies of black rhino living in Chad and the Cameroons. Heavily poached, they were thought extinct, but reports now indicate 20 or 30 may survive. Conservationists are focusing on locating and counting the animals, but captive breeding may be tried if their numbers are too low and their situation too precarious to protect in the wild, Western says.

The second group is the northern white rhino, which once ranged from Chad to Sudan. Numbering at least 1000 in 1960, they were reduced to a mere 15 by 1983 as political independence, revolution, and civil war in that part of Africa unleashed an orgy of poaching. All the remaining northern white rhinos now live in Zaire's Garamba National Park, where, closely guarded by aerial and ground patrols, their number has risen to 22.

Another 12 northern white rhinos form a captive population at the Dvur Kralove Zoo in Czechoslovakia. Three are to be sent to the San Diego Wild Animal Park next year to join one already there plus another from a Sudanese zoo to start a captive colony in the United States, says Tom Foose, conservation coordinator for the Wheeling, West Virginia-based American Association of Zoological Parks and Aquariums (AAZPA).

The expected arrival of the northern white rhinos heralds a stepped-up



The greater one-horned, or Indian, rhino. This animal is part of a growing population in Nepal's Royal Chitwan Park. Photo: Carol Loraine Price.

program by US zoos to breed rhinos in captivity. Such an effort is natural, Foose says, because rhinos have long been favorites of zoo goers. AAZPA has created species survival plans for black, white, Indian and Sumatran, and, perhaps one day, Javan rhinos. The object is to manage each species in captivity as one population to ensure their continued survival and genetic diversity.

Under the plan, individual rhinos will be shifted among zoos to create more natural social groupings. White rhinos, for example, will be sent from many smaller zoos to larger facilities, such as the National Zoo's conservation center in Front Royal, Virginia. White rhinos are more social animals, Foose explains, and would do better in large groups and open surroundings than would black rhinos. The latter, which live alone or in pairs, would then be moved into the smaller zoo enclosures.

To preserve the captive rhinos' genetic variability, about 75 animals from each species will be needed, Foose says. There are now no Sumatran, 32 Indian, 61 black, and 160

white rhinos in AAZPA zoos. Plans are to reduce by natural attrition the number of white rhinos to make room for more individuals of the other species.

Finding enough room in US zoos for 300 rhinos should be no problem, Foose says, but what if individual subspecies of each are to be bred in captivity as well? Chromosomal and mitochondrial DNA analyses done by Oliver Ryder, a geneticist at the San Diego Zoo, and others have recognized the southern and northern white plus at least two of six black rhino groups as distinct subspecies.

One solution to the space problem might be greater use of wild game ranches in Texas, such as La Coma and Fossil Rim, both of which already have rhinos. A second and more controversial solution would interbreed black rhino subspecies, especially those whose numbers are too few to preserve their genetic diversity.

But interbreeding subspecies risks losing distinct genetic traits that allow black rhinos to live in such diverse habitats as rain forest, dry grassland, and desert, Ryder warns. Western

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agrees, and at least for now captive white and black rhino subspecies will be bred separately.

In the case of Sumatran rhinos, US zoos need to start a captive breeding program. Only 13 Sumatran rhinos are in captivity—eight in a Malaysian reserve, three in Indonesian zoos, and two at Port Lympne, a private zoo in England owned by millionaire gambler John Aspinall.

Foose says at least five more pairs of Sumatran rhinos are to be captured for US zoos and two for zoos in Indonesia. Conservationists plan to focus on what he calls "doomed" animals that "cannot be preserved in the wild." These include rhinos vulnerable to poachers, rhinos already so isolated they cannot find mates, rhinos for whom no reserve exists or is likely to be created, and rhinos whose forests are rapidly being cut down.

Plans for saving the Javan rhino are more tentative. Java's Ujung Kulon National Park is thought to hold the only remaining lesser one-horned rhinos, although there are unconfirmed reports of Javan rhino tracks in remote western Vietnam. Time may be critical for the Javan rhino because several have died in recent years from poaching and a suspected anthrax outbreak. Wildlife biologist Dinerstein says the World Wildlife Fund will sponsor a survey of Ujung Kulon's rhinos in 1989 to determine their precise number (thought to be 45 or 50) and plan further action. That program might include taking some into captivity for breeding programs.

Gains

A bright spot in Asian rhino conservation has been the Indian, or greater one-horned, rhino. Its numbers have been increasing in recent years in parks like Nepal's Royal Chitwan

and India's Kaziranga. In Chitwan, for example, the number of rhinos rose from 60 or 70 in the early 1960s to 275 by 1975 and nearly 400 today.

Such gains have led Nepalese and US conservationists to relocate 13 Indian rhinos from Chitwan to Bardia National Park in western Nepal. Four others have been sent to Dudhwa National Park in India, which also received seven rhinos from Kaziranga. Both Bardia and Dudhwa are within the Indian rhino's former range, but they have had none for at least a century. Another 16 rhinos captured in Chitwan since 1985 have gone to zoos, including two each to the National and San Francisco zoos to bolster captive breeding programs.

An even more impressive recovery has been the white rhino's in southern Africa. Reduced by hunting and human settlement to 100 or so by the 1920s, the remaining southern white rhinos were concentrated in South Africa's Umfolozi Game Reserve. Protected, their numbers quickly grew. As they did, many were relocated to other African reserves and parks, and to zoos around the world. The population throughout Africa now totals about 4500 and is growing by 10% a year, Western says.

Although only a beginning, such efforts and their successes raise hopes that the world's rhinos can continue to survive as wild animals. Dinerstein for one hopes so. Working in the field with rhinos is "like being in another world," he says. "It is a chance to step back in geological time to when the world was full of large mammals. No one who has seen a rhino would want to see them and their world disappear."

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