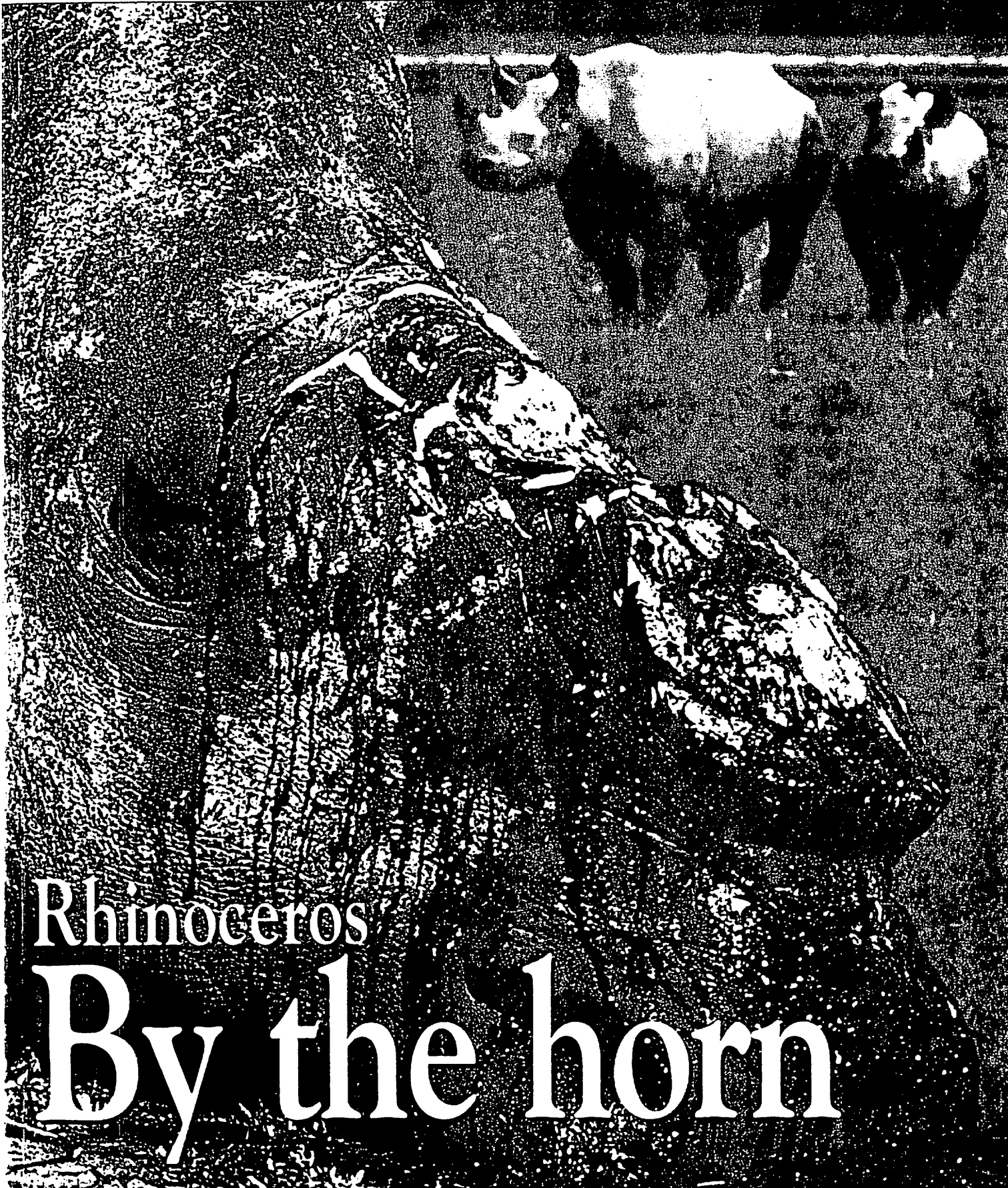


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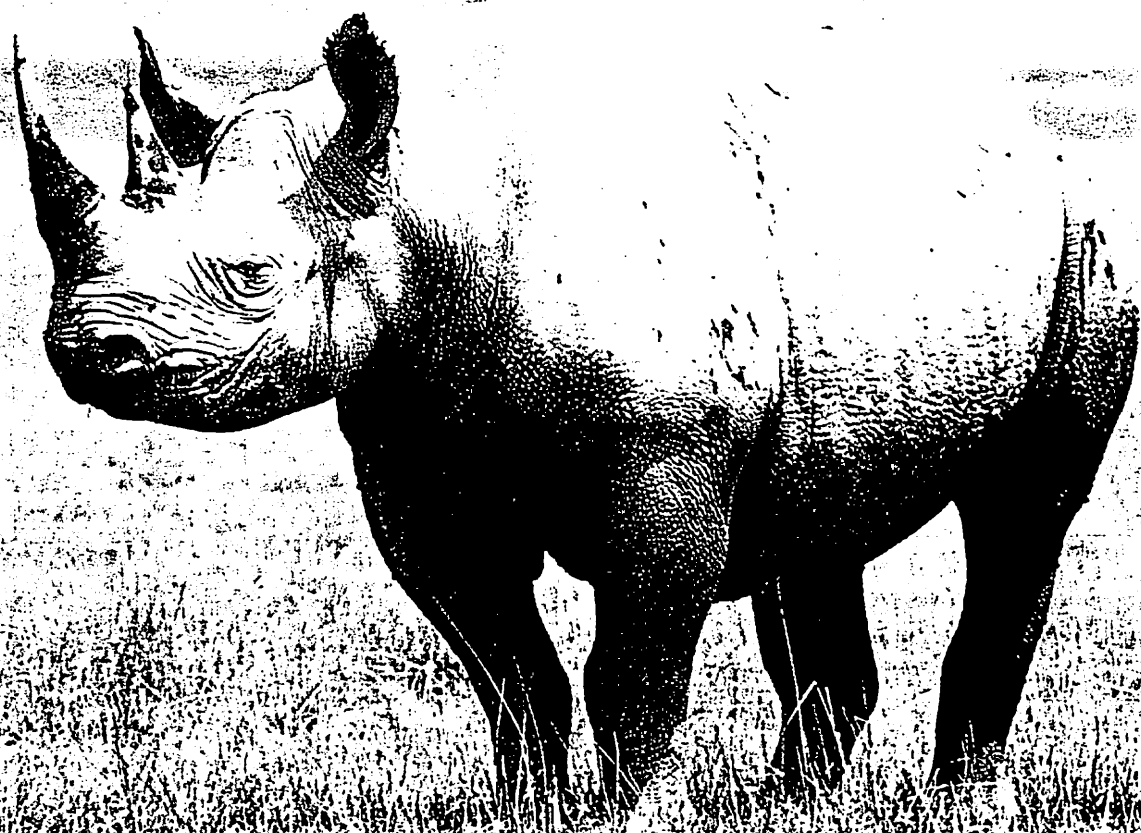


Rhinoceros

By the horn

TRADITIONAL CULTURES VS TRADITIONAL CONSERVATION

RHINOS BY THE HORN





by **Tom Milliken**
Director, TRAFFIC
East/Southern Africa

The fate of the rhinoceros seems tied to the measures taken to resolve the dilemma of the ongoing clash between culture and conservation. Since 1970, over 90 percent of the five species of this animal have been lost, and today less than 12,000 animals remain throughout the world. Illegal trade continues to be their number one enemy.

Special reports: CHINA AND INDONESIA



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fewer animals have worse luck surviving the 20th Century than the five species of rhinoceros. Since 1970, over 90 percent of the world's rhinos have been lost and today less than 12,000 animals remain. In spite of being listed on Appendix I of CITES since 1977, illegal trade in rhino horn continues to undermine the survival of the species in the wild. In response, an intensified effort to beef up protection programs in range states and close down on traditional markets in consuming countries is being pursued as never before. Still, one wonders if these traditional conservation measures can prevail over the traditional cultural forces which are currently shaping the bleak destiny of the rhino.

AN OVERVIEW OF THE SITUATION

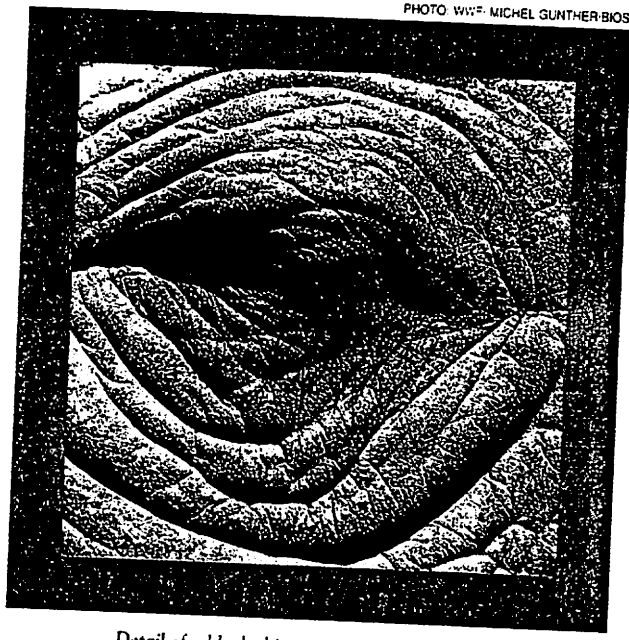
With a history on Earth reaching back millions of years, it is sad to say that all rhino species have a very diminished presence today. The great one-horned or Indian rhinoceros (*Rhinoceros unicornis*) of India and Nepal once ranged in a great arc across the northern part of the Indian sub-continent. Because of past hunting and expanding human settlement and agriculture, the species is now confined to two areas in Nepal, including the famed Chitwan National Park and some half dozen locations in eastern India, especially its stronghold in Kaziranga National Park. The population has inched its way up to 2,100 over the last decade. Sporadic outbreaks of poaching and the lack of a management plan in India to translocate surplus animals and establish breeding populations in other areas of suitable habitat have served to keep the population relatively static.

The Javan rhinoceros (*Rhinoceros sondaicus*), which also sports a single horn, is the world's rarest large mammal. Essentially a smaller version of the Indian rhino, its historical distribution once covered an enormous area from eastern India and Bangladesh across to southeastern China, throughout Indochina and Southeast Asia all the way to

the island of Java in Indonesia. Once thought to have been reduced to a single population of some 50 animals in Java (hence the species' common name), a number of small, isolated groups are now believed to be scattered through parts of Indochina. In all, probably no more than 75 Javan rhinos survive, and in some instances their protection will be difficult to safeguard.

Asia's third species, the Sumatran rhinoceros (*Dicerorhinus sumatrensis*) inhabits forests, often in mountainous areas, and was once widely distributed throughout eastern India, Burma, Thailand, parts of Indochina and Malaysia to the islands of Borneo and Sumatra. The species population was recently downgraded to only 275 animals, with most found in disparate parts of Indonesia and Malaysia. Although the figure represented a dramatic decline in the status of the species, serious deforestation and poaching will probably result in further losses in the immediate future. Perhaps the only secure groups are found in protected areas in Peninsular Malaysia.

PHOTO: WWF MICHEL GUNTHER-BIOS



Detail of a black rhinoceros (*Diceros bicornis*).

In Africa, the black rhinoceros (*Diceros bicornis*) has declined faster than any other large terrestrial mammal in recent history. From an estimated 65,000 in 1970, 25 years later only about 2,500 black rhinos remain today. Once distributed throughout sub-Saharan Africa, with the exception of forest zones of the Congo Basin, today the species strongholds are confined to parts of South Africa, Namibia, Kenya and Zimbabwe. No other rhino species has suffered such heavy poaching losses over the last decade.

Perhaps the only unmitigated success story so far is the white rhinoceros (*Ceratotherium simum*) of southern Africa. Numbering a handful of animals in an isolated population in South Africa's Natal Province at the turn of the century, ongoing conservation efforts have seen the population steadily increase to more than 7,000 white rhinos today. Through translocation and management programs, viable populations have been established throughout South Africa, Namibia and Zimbabwe. In fact,

out areas where plants.



Dehorning a rhinoceros in Zimbabwe, 1992.

this is the only rhino species that is part of a sport hunting program, earning significant revenues which help to finance its conservation. Accordingly, South Africa's population was transferred to Appendix II in early 1995 with an annotation limiting international commercial trade to the sale of live animals. The northern subspecies *C.s. cottoni*, however, is in dire straits: a single population, now numbering some 30 animals after more than a decade of conservation effort, remains in Garamba National Park in northeastern Zaire.

Theoretically, international commercial trade in rhinoceros parts, derivatives and products has been illegal since 1977, when all five rhino species were listed on CITES Appendix I. In practice, however, CITES has done little to inhibit trade in rhino horn to the Far East for use as an ingredient in traditional medicines or to the Arabian Peninsula to be carved into handles of traditional daggers. Although used in most Asian countries, China, Taiwan and South Korea are recognized as the world's leading consumers of rhino horn medicines which are credited with lowering fever and curing a wide range of ailments. Yemen and Oman are the principal producers of handles for traditional daggers worn by Arab men as a symbol of manhood. In fact, the dimensions of the problem are much greater and trade in rhino horn products has become a global phenomenon, affecting

countries – such as the United States – which are far removed from the traditional consumers.

In 1993 and 1994, the CITES Standing Committee, the United States government, the United Nations Environment Programme (UNEP) and many NGOs made rhino conservation a priority matter. Measures to pressure consuming countries to curtail internal markets for rhino horn products were pursued more vigorously than ever before, including threats of economic sanctions. In response to the growing international clamor, most major consuming countries moved to ban any further internal trade and have engaged in unprecedented crackdowns to stop black market trading.

**Trade in rhino horn products
has become a global
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removed from the
traditional consumers.**

PHOTO: WWF/PHILIPPE OBERLE



A stock of rhinoceros horn and skins of various animals seized by the Kenyan government.

While spot checks indicate that rhino horn is no longer openly displayed in most markets, the elimination of cultural traditions which date back many centuries is proving far more elusive. Affluent men in certain Arab cultures continue to prize daggers with rhino horn handles, and at least one report indicates that their clandestine manufacture continues. Similarly in the Far East, scratch below the surface in most markets and rhino horn remains available. In fact, the trade may never go away: recent sociological work in South Korea and Taiwan, for example, suggests that up to a quarter of the traditional medicine doctors believe there is no substitute for rhino horn and will continue using it in their practices in spite of the law. Further, available data in South Korea showed that the black market price for rhino horn doubled in the face of a legal crackdown. None of these indicators bode well for the future of rhinos.

Stricter legislation may represent some measure of progress, but implementation of the law has always been the pitfall for rhinoceros conservation. Policing the trade in rhino horn and its products presents an enormous challenge to law enforcement authorities. The small size of rhino horns makes them very easy to conceal in baggage or on one's person. In fact, rhino horns can be sent through the mail in rather innocuous parcels. Once

ground into powder or made into medicines, rhino horn is virtually impossible to detect without resorting to elaborate forensic tests which are generally not available in most consuming states. The simplest way for dealers to avoid immediate problems is to re-label incriminating stock or keep it away from business premises. Just as Western patients seldom question their doctors concerning the ingredients in medicines they prescribe, many Asian consumers remain unaware that rhino horn is in the medicines they take. The sad truth is that rhino horn trade may be diminished to some extent, but it has not been eliminated.

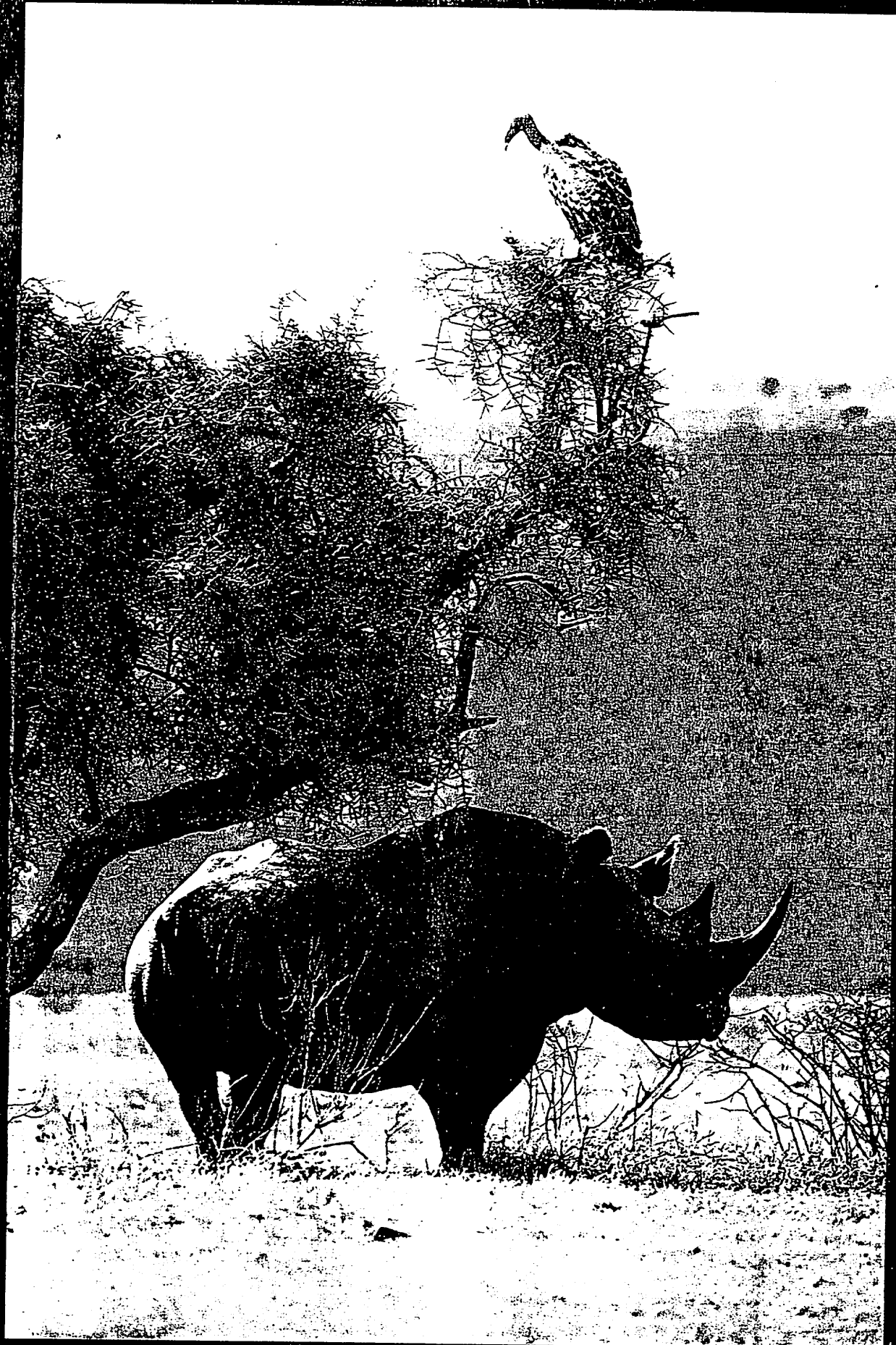
TRAFFIC is currently tackling the issue head on with an unprecedented outreach program directed at enlisting traditional medicine doctors themselves to find ways to ensure the survival of endangered wildlife. In October 1995, a TRAFFIC-sponsored symposium brought 75 specialists from China, Hong Kong, South Korea, Japan and Singapore together to discuss the unsustainable use of wildlife products in their health-care professions. While solutions remain to be found, an important step in beginning dialogue with this key wildlife-user group has been made.

PROGRAMS AND COSTS

Meanwhile, the situation for rhinos in many African and Asian range states continues to deteriorate. Protecting rhinos requires very large sums of money – money which is rarely available either through national conservation budgets or from the donor community. In Africa, successful anti-poaching programs require a

Affluent men in certain Arab cultures continue to prize daggers with rhino horn handles, and at least one report indicates that their clandestine manufacture continues. Similarly in the Far East, scratch below the surface in most markets and rhino horn remains available.

PHOTO: WWF/MICHEL GUNTHER/BIOS



Black rhinoceros (*Diceros bicornis*) in Nairobi National Park, Kenya.

PHOTO: WWF-PHILIPPE OBERLE



Incineration of rhinoceros horn in Kenya.

sustained funding level of US\$400-1,000 for every square kilometer of rhinoceros habitat, and a staff complement of at least one man for every 20 square kilometers in order to be effective. In Asia, the costs of protection may even be significantly higher. Rhino range states, some of the poorest countries in the world, are simply not capable of meeting these high costs year after year.

In the face of crisis management, a number of innovative programs have been introduced to protect rhinoceros *in situ*. In Namibia, a community-based rural conservation program is taking shape with the protection of black rhino as a central feature. By linking social and economic benefits to the sustainable use of wildlife, local people are now acting as community game guards, protecting the wildlife they might otherwise feel obliged to poach.

In Namibia and Zimbabwe, hundreds of rhinos have been dehorned with the hope of making them less attractive targets to poachers. With generally positive results in Namibia, the Zimbabwe dehorning experience has produced mixed results but is still recognized as a legitimate component in the country's overall conservation strategy. In areas where all animals were recently dehorned, the evidence indicates that poachers moved out for a period of time. On the other hand,

where both dehorned and horned rhinos coexisted, including animals carrying a year and a half of horn regrowth, serious poaching – and rhino losses – have continued. Given the rate of horn regrowth, one study suggests that dehorning must be done annually in order to succeed as a viable strategy to deter poaching. Finally, dehorning is not cheap and can cost up to US\$1,000 per animal. Safari Club International, however, may soon be promoting rhino darting and dehorning safaris among its members to help range states meet the steep costs of this conservation strategy.

Both Kenya and Zimbabwe have moved forward with the creation of rhino sanctuaries, conservancies or so-called "intensive protection zones." The central strategy of these variously-named efforts is to concentrate both rhino numbers and available resources into specific areas in order to provide maximum security and breeding output. Other range states such as Tanzania and Cameroon may soon be following suit with similar programs. The costs of moving rhinos into secure areas which are properly fenced and guarded, however, is also very expensive. If Kenya's experience is any indication, a single sanctuary can easily consume over one million US dollars in just a few short years. Fortunately, in Zimbabwe's conservancies – which are the result of converting vast areas of private land from livestock back to wildlife – and on a couple of Kenya's

Indian rhinoceros (Rhinoceros unicornis), India.

PHOTO: WWF-HEY-MILLET





Black rhinoceros (Dicerus bicornis), Tanzania.

The situation for rhinos in many African and Asian range states continues to deteriorate. Protecting rhinos requires very large sums of money – money which is rarely available either through national conservation budgets or from the donor community.

private ranches, these costs are largely met by the private sector. Some range states clearly strive for self-sustaining conservation programs which are not donor dependent.

Certainly in Africa, the traditional rhino conservation strategies are being challenged as never before. South Africa, Namibia, Zimbabwe – three southern African range states which together harbor about half of the remaining rhinos – are skeptical that Asian cultural traditions can be modified in time to prevent the rhino's slide toward extinction. That skepticism, combined with the practical realities of an unrelenting poaching crisis, raises the issue of a legal trade in rhino horn. These countries are holding large stockpiles of rhino horn, which continue to grow through ongoing dehorning and law enforcement efforts. The big question is: could the

release of such stocks into end-use markets actually arrest the demand for illegally obtained horn and undermine incentives to poach?

Testing such radical ideas would involve an unprecedented degree of international cooperation. A marketing strategy would have to be carefully considered and any number of safeguards structured into any approved scenario. And certainly, modification of the current treatment of rhinos under CITES would be necessary. Still, with no end in sight to the rhino crisis, it would be irresponsible to not meticulously weigh every available option. Who knows? Previously unthinkable solutions may actually help resolve the ongoing clash between culture and conservation. ☺

Yemenite youth displaying traditional daggers, some of which are made with rhinoceros horn.



PHOTO: WWF/ESKOND B. MARTIN

CHINA

6350



A CULTURAL BATTLE

by **Xu Jun**

Deputy Chief, CITES Management Authority
The People's Republic of China



Alarmed by a 90 percent decline in the worldwide population of rhinoceros since 1970, conservationists around the globe have made the plight of the rhinoceros a major point of concern. The principal cause of the decline of this ancient, unique and rare animal is poaching for international trade, in particular for the traditional Oriental medicine, which attributes multiple curative powers to its horn.

There are only five species of rhinoceros throughout the world today: two of them are distributed in Africa – the black rhinoceros (*Diceros bicornis*) and the white rhinoceros (*Ceratotherium simum*) – and three in Asia – the great Indian rhinoceros (*Rhinoceros unicornis*), the Javan rhinoceros (*Rhinoceros sondaicus*) and the Sumatran rhinoceros (*Dicerorhinus sumatrensis*).

China, though the largest nation in Asia, has never been a range State of the species. Nevertheless, whenever the topic of rhinoceros conservation is discussed (all five species are listed in CITES Appendix I, except one population of the white rhino), China is also mentioned. To understand why, it is necessary to understand traditional Chinese medicine.

TRADITIONAL MEDICINE

For thousands of years, long before recorded history, the use of wild animals and plants for medicinal purposes has been an important part of Chinese culture. The rhinoceros, highly valued for the healing attributes of its horn, is closely linked to that age-old custom. If the rhinoceros were to become extinct, an invaluable part of traditional Chinese medicine would also disappear.

Rhino horn contains rare and precious medicinal properties. For centuries, powdered rhino horn has been

used as a crude drug in numerous applications. Its most important therapeutic attributes include stopping fever, counteracting toxicity, relieving convulsion and cooling blood. It has been used in nearly 100 traditional Chinese medicines, such as Angong Niu Huang Wan, Niu Huang Qingxin Wan, Dahuoluo Wan, Xijiao di Huang Wan, Xijiaijiedu Wan, for the treatment of encephalitis, apoplexy, paralysis, hemiplegia, high fever, convulsion, coma and other conditions.

Such patented medicines are an indispensable part of traditional medical practice and are deeply trusted by the Chinese people, both on the mainland as well as abroad. The use of rhinoceros horn has also been a significant factor in the establishment and diffusion of traditional Chinese medicine among other Asian countries, coming to play an equally important role in their medical cultures.

For this reason, the fight for rhinoceros conservation can also be called the cultural battle to conserve traditional Oriental medicine.

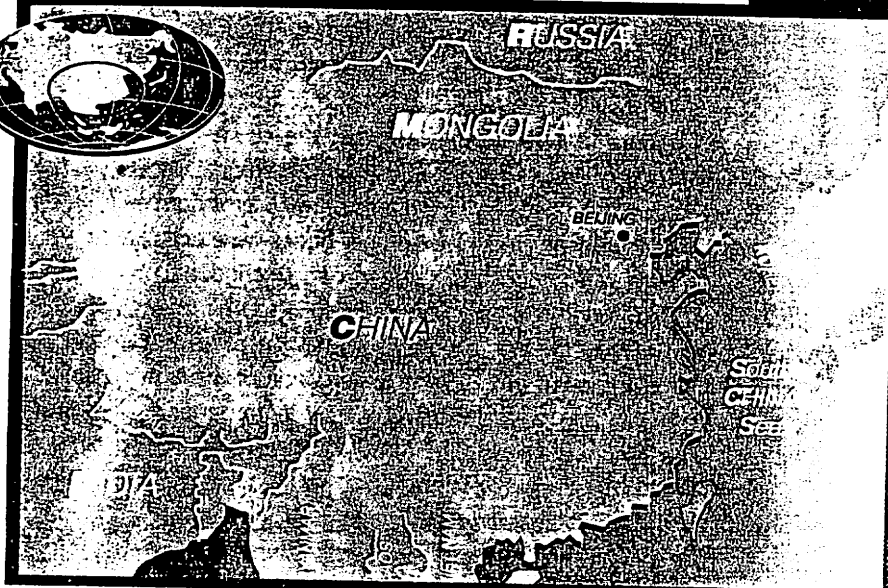
Because of excessive hunting, poaching and smuggling the rhinoceros is now in danger of extinction, its population having dwindled 90 percent in the past quarter century. Saving the rhinoceros from extinction is the common task and historical responsibility of all the countries concerned.

CITES member States realize that peoples and nations are, and should be, the best protectors of their own wild

PHOTO: WWF/ROLAND SEITRE-BIOS



Rhinoceros horn on sale at the Chengdu market, Szechwan, China.



CHINA

Population: 1,170,000,000 inhab.

Urban population: 26.23 percent

Population density:

118 inhab./sq.km.

Area: 9,596,960 sq.km.

Capital: Beijing.

Other cities: Shanghai, Shenyang, Guangzhou.

fauna and flora. Therefore, the greatest efforts in species conservation should be undertaken in their range States.

Developing their economies, strengthening conservation management and promoting or improving the standard of living of local residents are all keys to providing the best possible protection for the rhinoceros. However, this also requires overcoming many difficulties, since most range States are developing countries that lag far behind the industrial world in economic and technical terms.

Saving the rhinoceros from extinction means providing assistance to the range States, especially with funds and technical know-how from the leading economies. This should be not only a common responsibility, but also an international obligation.

China, as the world's major rhino horn consumer country, also bears significant responsibility in protecting the rhinoceros. China's stance towards wildlife conservation and the compliance with international obligations has been clear and forceful.

AN ARDUOUS TASK

The provision in the Law of the People's Republic of China on Wildlife Protection stipulating the inclusion of the rhinoceros among the wild species benefiting from the highest degree of protection by the State provides a strong legal base for implementing CITES. In terms of rhino conservation, it affords the legal measures to control the illegal trade, transportation, processing and use of rhino horn and related activities.

In order to support and encourage range States to take an active role in rhinoceros conservation and block illegal trade routes, the State Council of the People's Republic

Language: Chinese, official; deriving from northern Mandarin. There are dialect variations in the rest of the territory, of which the most widespread is Cantonese in the south.

Religion: There is a diversity of religions in China. Taoism, Buddhism, Islamism, and Christianity are spread throughout the entire country with close to 100 million believers.

Currency: Yuan.

People: 95 percent of the population is of the Han nationality group. The rest of the population belongs to another 55 nationality groups. The Han possess their own language and writing which, owing to sheer numbers, is the most widely practiced language in China and in the world. The Hui and Manchu also use the Han language. The other 53 national minorities have their own languages and 23 of these are written.

Geography: The relief divides the country into three large regions: Asiatic Central China, with high plateaus, frozen during the winter and covered with meadowlands in summer; Northern China, where the great prairies of Manchuria extend; and Meridional China, a hilly region crossed by the Yangtze Kiang and Si Kiang rivers. Today, China has more than 95 million cultivated hectares. It is one of the countries with the most varied animal life in the world.

Most endangered species: Tiger (*Panthera tigris*), Giant Panda (*Ailuropoda melanoleuca*), Golden Snub-Nosed Langur (*Rhinopietecus roxellana*), Chinese Alligator (*Alligator sinensis*), Chinese Monal (*Lophophurus lhuysii*), Chinese Giant Salamander (*Andrias davidianus*). ❁

of China issued a Notice banning all trade of rhino horn and tiger bone and their medicinal use.

The Xinhua News Agency, the People's Daily newspaper, Chinese Central Television, the Central People's Broadcasting Station and other major mass media immediately began campaigns to explain the trade ban to the public and enlist popular support for the prohibition.

The Departments of Forestry and Public Health took swift action, organizing and implementing the Notice nationwide: monitoring, registering and weighing legally obtained rhinoceros horn and Chinese medicinal products which contain elements of rhino horn, and completely halting all future production of Chinese medicinal products which are made with rhino horn and tiger bone. This had a tremendous impact on the economy, producing a direct loss of about 2.5 million US dollars.

Last year, the Environment and Resources Conservation Committee under the Standing Committee of National People's Congress together with the Environment Protection Committee of the State Council organized a national review on law enforcement related to environmental protection.

A look at implementation of the trade ban on rhino horn and tiger bone revealed interesting data. A total of

some 40,000 persons combed the country inspecting about 3,100 marketplaces and medicinal stores. In January 1994, 230 kilograms of rhinoceros horn and 50 kilograms of real or false tiger bones were destroyed in separate actions in Zhanjiang city, Guangdong province and Haerbin city, Heilongjiang province. All the material destroyed was confiscated during law enforcement crackdowns in 1993. Implementation of the Notice ban was also a major part of law enforcement activity throughout 1994.

These efforts plainly show the determination of the Chinese government regarding strict enforcement of laws protecting the rhinoceros, putting all its weight behind stopping excess hunting, poaching, illegal trade and all other unlawful or unauthorized activity regarding this rare and precious species and its by-products.

Despite confronting many obstacles and sustaining tremendous economic loss, China, as a developing nation, is effectively pursuing a host of activities on behalf of rhinoceros conservation. This should be deservedly recognized as China's greatest sacrifice and contribution in support of international rhino conservation measures, especially in range States.

Nonetheless, rhino horn has been used in medical products in China for eons and is widely accepted by its people. Time is needed to change the traditions and beliefs that have passed from generation to generation. The government must therefore carry on efforts to implement the trade ban on rhino horn, encouraging ongoing education programs to promote understanding and support from the general public, strengthening law enforcement and controlling and combatting illegal trade and unlawful activities.

In the meantime, research on a substitute for rhinoceros horn and its applications is also a major task which needs to be undertaken in order to satisfy public demand for medicinal products and disease prevention. Indeed, research for a substitute has been listed as a top state priority on the 21st Century Agenda of the People's Republic of China and the ninth 5-year state technical research plan.

The task ahead is long and arduous; its cost great. And it requires the sincere understanding and support, as well as the urgent and welcomed assistance, of the international community. ☉

PHOTO: WWF/ESMOND MARTIN



Medicines made with rhinoceros horn.

INDONESIA

FLAGSHIP SPECIES

(635)

by **Charles Santiapillai**
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Two species of rhino occur in Indonesia. While the Javan rhino *Rhinoceros sondaicus* is represented by a single population of about 60 animals confined to the Ujung Kulon National Park situated in the southwestern tip of Java, the Sumatran rhino (*Dicerorhinus sumatrensis*) occurs in a number of small, fragmented and isolated populations numbering about 300 animals across Sumatra and parts of Kalimantan (Indonesian Borneo). Both species — listed on Appendix I of CITES — are among the world's most seriously endangered large mammals.

These two rhino are Indonesia's flagship species. Indeed, despite the concern expressed and the measures adopted so far by Indonesia and international conservation organizations, few people would dispute that these conservation efforts, coupled with the ban on rhino horn trade, have failed to halt the decline of the two species in the wild.

Considered Indonesia's flagship species, the aesthetic value of the Javan and Sumatran rhinos arouses public emotions and attracts strong support for their conservation. Unfortunately, despite all efforts, the two species continue to be threatened by poaching and habitat loss. Both species have already disappeared from many parts of their former range in Asia, and the remaining isolated and fragmented populations continue to be extremely vulnerable to poaching and human encroachment.

The issue at the core of rhino conservation is whether to protect the species in their natural habitat within their former range in Indonesia (*in-situ* conservation) or to take some animals out of the wild and breed them in captivity in zoos for reintroduction in the distant future (*ex-situ* conservation).

Proponents of both conservation methods agree that, in the long term, the end result of their approaches must ensure the survival of the two species in their natural habitat. What the *ex-situ* conservationists fear is that the protection currently afforded to the two species of rhinos

in Indonesia may not be sufficient to prevent further decline in range and number.

Given this concern, the International Zoo Community, with the blessing of the IUCN, embarked on an ambitious project to capture the so-called "doomed" Sumatran rhinos for breeding in captivity both in Indonesia and abroad.

Between 1984 and 1993, a total of 18 animals (7 males and 11 females) were captured — 11 of which (4 males and 7 females) were exported. Of those 18 animals captured, so far 7 of them (1 male and 6 females) have died in captivity, a 39% mortality rate. To date, not a single animal has bred in captivity.

The entire project was also very expensive. International zoos and conservation agencies have given increasing

PHOTO: WWF/MIKE GRIFFITHS



A Javan rhino (*Rhinoceros sondaicus*)
in the Ujung Kulon National Park, Java, Indonesia.



INDONESIA



Population:
179,300,000 inhab.

Urban population:
28 percent

Population density:
93 inhab./sq. km.

Capital: Jakarta

Other cities: Medan,
Bandung, Surabaya,
Padang.

Language: Bahasa Indonesia (national language). There are 583 languages and dialects belonging to different ethnic groups.

Religion: The majority is Muslim. There are also Protestants, Roman Catholics, Buddhists and Hindus.

Currency: Rupiah

People: Archeological remains point to Indonesia as one of the first places on Earth populated by Homo sapiens. More than 90 percent of the current population is of Malayan origin, largely from the Javanese ethnic group. There are also Chinese and Indian minorities.

Geography: Indonesia occupies most of the largest archipelago in the world. It is found on the equatorial line, covering a distance of approximately 5,120 kilometers. There are five main islands (Sumatra, Java/Madura, Kalimantan, Celebes, and Irian Jaya) and thirty other smaller groups. It is estimated that there are more than 17,000 islands, many of which are uninhabited. The lands are generally covered by thick tropical rain forest. Indonesia is noted for its large number of volcanos (some 400, of which 100 are active).

Most endangered species: Sumatran Elephant (*Elephas maximus sumatranus*), Javan Rhinoceros (*Rhinoceros sondaicus*), Sumatran Rhinoceros (*Dicerorhinus sumatrensis*), Malayan Tapir (*Tapirus indicus*), Sumatran Tiger (*Pantera tigris sumatrae*), Bawean Deer (*Cervus kuhlii*), Lowland Anoa (*Bubalus depressicornis*), Mountain Anoa (*Bubalus quarlesi*), Silvery Gibbon (*Hylobates moloch*), Mentawai Gibbon (*Hylobates klossi*). ☉

attention and funding to captive breeding schemes and re-introduction programs. But no matter how useful these programs are in support of other conservation efforts, they can never replace *in-situ* conservation.

The principal threats facing the Sumatran and Javan rhinos in Indonesia are poaching and habitat degradation.

Poaching: The value of rhino horn makes it inevitable that poaching will continue to be a serious threat in the years to come. The Sumatran rhino is a prime target for hunters throughout its range in Sumatra and Kalimantan. The dependence of this species on salt licks and other concentrated mineral sources makes it extremely vulnerable.

Poaching continues both within and outside protected areas. The exact number of Sumatran rhinos poached annually must be substantial, given that in 1990 alone at least 10 animals were killed in Kerinci-Seblat National Park in West Sumatra. Several of the rhinos captured in the Torgamba forest for captive breeding had snare wounds on their legs.

In the early 1960s, one-third of the Javan rhinos fell victim to poachers. Although the incidence of poaching seems to have declined to some extent since 1967, it still remains a serious threat to the Javan rhinos in Ujung Kulon National Park on account of their small numbers (about 60 animals).

Controlling poaching must therefore remain the key thrust of any conservation program. It is now generally accepted that in poor countries large conservation areas and sizeable populations of large mammals – especially megaherbivores (those plant-eating animals that attain a body weight in excess of one metric ton) – can only be maintained if substantial funding is given to enhance protection by park rangers.

Sumatran rhinoceros (*Dicerorhinus sumatrensis*), Indonesia.



PHOTO: WWF/ALAN COMPOST

Habitat degradation: The conversion of forest to agriculture and other forms of land use is one of the most serious threats facing all large mammals, including the rhino in Sumatra. Changes in land use patterns are leading to the continuous contraction of the rhino's habitat, destroying forest corridors that act as bolt-holes for the rhinos to move from one forest block to another. It is estimated that between 65 and 80 percent of the lowland forest in Sumatra has already been lost.

Human activities along the eastern border of Ujung Kulon National Park pose another problem facing the Javan rhino. They have not only encroached into Javan rhino habitat but, more seriously, they provide a means for the spread of diseases brought by domestic cattle into the park from outside. In the early 1980s five rhinos (representing almost 10 percent of the population) died in Ujung Kulon, possibly from an epidemic disease.

As far as Sumatran rhino conservation is concerned, while the need to retain large tracts of undisturbed climatic ecosystems is axiomatic, stopping commercial exploitation of timber in forests managed as habitat for the rhino is not as urgent: exercising strict control is sufficient. Sumatran rhinos are known to utilize logged-out areas where there is an abundance of regenerating plants.

In the final analysis, the safest, easiest, and cheapest way to protect the two species of rhino in Indonesia is *in-situ* conservation. Better protection of Ujung Kulon in Java and other reserves in Sumatra would not only safeguard the two species of rhino but many other wildlife species that are sympatric with the rhinos as well. If the Ujung Kulon population of Javan rhino grows, it may be possible to remove a very small number of animals to found a second population elsewhere in Indonesia within the Javan rhino's former range.

By using the Javan and Sumatran rhinos as symbols of conservation, it should be relatively easy to elicit international support for Indonesian rhino reserves. Zoos have played a key role in captive breeding and reintroduction programs. They could also play an equally important role in improving the protection and viability of rhino habitats.

Conservation of the two species of rhinos in Indonesia should not be considered as showing preference for this so-called "charismatic" species: it provides a practical means for enhancing the country's overall conservation capacity. If the Sumatran and Javan rhinos are Indonesia's flagship species, their conservation will help maintain biological diversity across a substantial area of Indonesia. ☉