



From the Jungle to Kathmandu: Horn and Tusk Trade

Esmond Bradley Martin



To Susie
with warm regards,
Esmond

Nairi
April 2010

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Wildlife Watch Group

Esmond Bradley Martin

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FOREWORD

The Greater One-Horned Rhinoceros (*Rhinoceros Unicornis*) is a national icon of Nepal. It is also a mysterious pachyderm. Legendry for its enormous powers, erratic temperament, feared for its extraordinary strengths, and prehistoric in origin, the rhino is inundated with contradictions. Celebrated in myths, religion, and song and yet slaughtered by poachers for its psychotherapeutic powers, the rhino survives in Nepal in greatest numbers in Chitwan National Park – a World Heritage Site. In the last two decades, a few have been translocated from Chitwan to Bardia National Park and Suklaphanta Wildlife Reserve signifying Nepal's successes in conserving her natural heritage. Recently, Nepal has gone through an unprecedented historical upheaval that transferred the country from an ancient kingdom to a 21st century republic. Nature conservation now stands at the crossroad of the new Nepal, as there has been a momentous paradigm shift on governance, both in style and substance. However, the rhino's ranking as Nepal's iconic symbol of cultural dignity remains unchallenged—both within and outside the country—irrespective of political ideology or faith. Therefore, it is aptly pertinent that the Wildlife Watch Group (WWG), a leading environmental watchdog in Nepal, took upon itself to publish this book. This publication also reinforces the beliefs in the global community that the rhinos are significant not only to the people of Nepal but also to the whole world.

The author of this book, Dr. Esmond Bradley Martin, is an outstanding American scholar of nature conservation, and cultural geography. A scion of an aristocratic family from Old Westbury in New York, he was lured to Kenya by its history and its culture. Trained as a geographer and domiciled in Nairobi for four decades, he has traveled all over the world probing illicit trafficking and trade in wild animals, particularly trade in rhino horns and elephant ivory, both overtly and covertly. A man of vast vision and courage he ranks as the world's top most expert on consumption and trade in wild animals. He earned this honor not by sitting in a fancy office or a library in the West, but by trudging for more than three decades around the sleazy and glamorous shops in the streets of Europe, America, Asia, and Africa—and traversing the tropical jungles and grasslands of the world—studying rhinos, tigers, and elephants on foot, jeep or even on domestic elephants.

This publication aptly entitled **From the Jungle to Kathmandu: Horn and Tusk Trade** is an authoritative book on international trade in rhino horns, other rhino body parts and ivory. It illustrates Dr. Martin's continuing work on monitoring the underground trade in rhino body parts and ivory. Author of 20 books and over 250 articles, his publications are raved by conservationists both in the East and in the West. Though many of his publications probe the seedy side of the black markets in wildlife, a few illuminate conservation successes stories, particularly on Nepal's successes in bringing the rhinos back from the brink of extinction.

“Saving wildlife is not a science like physics or mathematics, but like politics it is an art, an art of the possible,” is an adage often quoted by conservation biologists operating in the field

of saving wildlife. Like politics, wildlife preservation is also shadowed by myths. The older the beliefs, the harder it becomes to dispel them. Busting old beliefs on sexual powers of wild animals or their body parts needs an unbeatable combination of commitment, perseverance, and at times personal risks to one's life. It also needs facts that are substantiated with hard science and empirical data to distill the facts from fiction. It needs a scientist with a missionary zeal and exceptional political valor to break centuries of beliefs. There are only a handful of those around even in the 21st century. Dr. Esmond Bradley Martin's rank is unrivaled in the list.

"If I was going to die today, my biggest contribution academically would be to show that except in the past for one small area in India, rhino horn has never been used by Asians for sexual purposes, not at all," once said Dr. Martin in interview on December 29, 2007 of the Weekend Edition of America's prestigious National Public Radio. He was lamenting about grossly erroneous statements in both Western and Eastern literature that linked the demise of the rhinos with the usage of rhino horn as an aphrodisiac by the Chinese. He based his statement on facts that he uncovered when he undertook an unprecedented study in the late 1970s and early 1980s on trade and usage of rhino horn and other body parts. Risking life-threatening wrath from rhino poachers and smugglers, he traveled for months, from the main streets of Sana'a in Yemen; to the back streets of Bangkok, Thailand and other cities in India, Indonesia, and Malaysia; to the remote provinces of China; and to the flourishing bright light districts in Korea, Japan and Singapore, studying the secret trade and usage of rhino parts. He was the first to prove the common belief that the Chinese use rhino horn as a sexual tonic was totally a myth. A few people have tried to trace the origin of this hearsay since Dr. Martin published his findings in his 1979 report entitled *The international trade in rhinoceros products: a report for the World Wildlife Fund (WWF) and International Union for Conservation of Nature and Natural Resources*. It is assumed that the origin of this myth could be traced back to the colonial era of the British Empire in Asia. It may have been triggered by some British tea-planters or hunters, who may have observed the rhino's ability to copulate for hours in the flood plains of the Brahmaputra in and around Kaziranga National Park. Some claim that it was a part of the anti-Chinese hysteria created by the Europeans to smear the Chinese.

This book is also a product of Dr. Martin's quest, which is driven by needs to distill the facts from the fiction to design and implement an effective conservation program, including developing tools to enforce the International Convention on Trade in Endangered Species of Wild flora and Fauna (CITES) –a global covenant ratified by 174 countries. The signatories to CITES can only ignore his learned opinion at the peril of their wildlife conservation program. Nepal, as one of the earliest signatories of this international treaty, is no exception. The book reiterates that Dr. Martin's status as the world's leading authority on international trade in wildlife, particularly rhino horns and elephant ivory, remains undisputed.

I first met Dr. Martin in 1975 in Kinshasa, Zaire during the 12th General Assembly of the International Union for Conservation of Nature and Natural Resources (IUCN). He was the last person I would have expected to become the world authority on trade and trafficking on endangered species. Tall and slim, impeccably dressed, and sporting puffed-up creamy colored

hair, Dr. Martin resembled a Hollywood movie star or a model for top-of-the-line men's suits in glossy men's-wear magazines. He was nowhere close to the appearance of a hard-nosed scientist, as I discovered. His studies have revealed that there are two main uses for rhino horn. Many in Eastern Asia use powder or pellets to lower fever especially for children. "Mothers and parents will spend almost any amount of money to cure their child," he opined in his interview with National Public Radio. "So it's not a luxury item." Nevertheless, in most parts of Asia, the rhino has been long viewed in oriental medicine as a four-footed pharmacopoeia. Virtually all its products from toenail to blood, hide and even its urine are used to treat one or other kind of ailment. However, Dr. Martin's studies revealed, for the first time, that the small and impoverished Arab nation of Yemen had the most lucrative market for African rhino horns. He found out that for thousands of years the Yemenis have been making their top of the line dagger handles from rhino horns. The daggers are called Jambiyas. Bearing one is prestigious. Rich Yemenis give daggers with handcrafted rhino-horn handles to their young men, family members, and guests in a coming-of-age ceremony.

Nepal is the home to the second largest population of the Greater One-Horned Rhino after India. Since 1968, Dr. Martin has visited Nepal, befriending members of Nepal's Department of National Parks and Wildlife Conservation, wildlife NGOs and those in tourism who rely on the rhino to sustain their trade and livelihood. He has spent days living with the guards and guardians of rhino sanctuaries such as the Chitwan National Park. He has spent hours meeting and interviewing poachers, traffickers, and other slimy traders dealing in rhino horn and other animal parts, a few of them behind the bars in Bharatpur jail in Chitwan District. He has also participated in rhino censuses in Nepal, mostly as an independent observer to ensure that the data are not fudged by overzealous government bureaucrats, as often is done in many developing countries.

During my thirty years of service as a wildlife conservationist, I have met many people in Nepal. Yet, there are few that we could truly call a Nepal-Wallah, denoting a true friend of Nepal who has remained my motherland's friend in both good times and bad times. Dr. Martin has been a constant partner in Nepal's conservation effort, sometimes on his own personal expenses, and has shared dust, sweat, and rains; treks, elephant rides and jungle drives; jokes, joys, and laughter; and above all words of wisdom on practicality and pragmatism for not only doing the right thing but doing the smart thing in saving the rhinos and tigers in Nepal. It may sound paradoxical, but, I do credit a few foreigners for enabling me to discover the values of my country's national treasure – the Greater One-Horned Rhinoceros. My old friend Esmond Bradley Martin ranks among the top of the list. It is also from his research and studies that my old friend the late Dr. Tirtha Man Maskey, our boss Mr. Biswa Nath Upreti, our colleague Ram Prit Yadav, many others, and myself benefited in our works in saving the rhinos in Chitwan or finding them new homes in Bardia or Suklaphanta.

This book is a fruit of thirty years of hard labor. It highlights a thorough and unparalleled investigative study on illicit trafficking of rhino products, especially the horn. Its findings are relevant to Nepal now, as they have always been for the past thirty years. I am certain that this

book will prove to be an asset to the present generation battling to save the rhinos in Chitwan, Bardia, and Suklaphanta.

Hemanta R. Mishra, Ph.D

Founding Staff of Nepal's Department of National Parks and
Wildlife Conservation and author of *Royal Chitwan National Park*,
Wildlife Heritage of Nepal and "*The Soul of the Rhino*."

Vienna, Virginia, USA
New Year's Eve 2008

INTRODUCTION

The greater one-horned Rhino is an important asset to Nepal because of its religious, cultural, decorative and medicinal value. Almost all parts of the Rhino's body have great significance. Rhino horns, hooves, skin, liver, urine and blood are traditionally in high demand and are sold on the international black markets. These bring about huge amounts of money which encourage Rhino poaching. In the 1950s and 1960s, the decline in Nepal's Rhino population was catastrophic.

But in recent times, we can see there has been a decrease in the poaching of Rhinos. This may be due to the fact that people have become aware about the benefits of having a live Rhino over a dead one. Not only that, also due to laws and regulations against poaching, more people have become reluctant to poach rhinos. Also, the highly effective park-people interaction along with 'special patrolling' and 'sweeping operations', have led to prolific Rhino conservation.

In today's time we can see that there is an increase in the number of Rhinos relative to most Asian countries. This is due to the proper management by the government and non-government officials to save the planet.

The number of rhinos has increased dramatically in Nepal from 1994 to 2000 from 440 to 612 (DNPWC 2000). In 2007, only 5 Rhinos were poached. This data show the success story of rhino conservation.

During my visit to Barcelona, Spain for the IUCN 4th Congress in October 2008, Dr. Esmond Bradley Martin, Dr. Hemanta Mishra and I talked about the contribution of Dr. Martin's work in Nepal's conservation movement. Though Dr. Martin and I have a good and direct relationship from 2005, during our talk in Barcelona, we suggested that Dr. Martin should have a book published that would reflect his works done in Nepal. Since 30 years, Dr. Mishra and I felt that his book would have a huge impact on the conservation policies in Nepal. Dr. Hemanta Mishra agreed to write a foreword and this is how "From the Jungle to Kathmandu: Horn and Tusk Trade" came into being.

WWG or Wildlife Watch Group was established in October 1993 as an informal group which wished to study and monitor issues regarding illegal wildlife trade. In May 2002 it became a full fledged registered NGO in Nepal and is a member of The World Conservation Union (IUCN), Species Survival Network (SSN), International Tiger Coalition (ITC), Snow Leopard Network (SLN) that focus mainly on wildlife

trade related issues in the nation and region. Since its inception, WWG has been alerting and educating the public on various wildlife issues and reminding the concerned authorities of their responsibilities towards the protection and conservation of wildlife by implementing CITES regulations. Side by side it is also monitoring the wildlife trade and advocating against illegal trade of wildlife and its products.

It is an honor to publish a book of an author of such stature recognized internationally.

Many international and national governmental organizations have been addressing wildlife trade issues after the 1980s. But Dr. Martin has been involved with wildlife issues and conservation since the 1970s. So, Dr. Martin has more experience and knowledge in this field because of his constant field visits and publication of many articles and books which are renowned worldwide. Dr. Martin has been recognized as a good researcher, investigator and author worldwide in the field of illegal wildlife trade.

This book is a collection of all the works Dr. Martin has done in Nepal regarding the greater one-horned rhino. Dr. Martin has given brief and important information including the history of rhino poaching in Nepal to the present day status of rhino conservation in national parks. This book proves to be a gift by Dr. Martin to all the conservation fraternities.

In this book, he has suggested very practical and highly effective measures that should be taken into consideration by various governments in different countries for rhino conservation and if these recommendations and suggestions are acted upon, our government will be successful in preventing rhino poaching.

WWG in the near future is thinking of establishing the Esmond Bradley Martin Foundation- an NGO to be established which will implement the recommendations of Dr. Martin. This will then make path for worldwide application of his research. This institution will precisely look to execute his ideas and institutionalize his work.

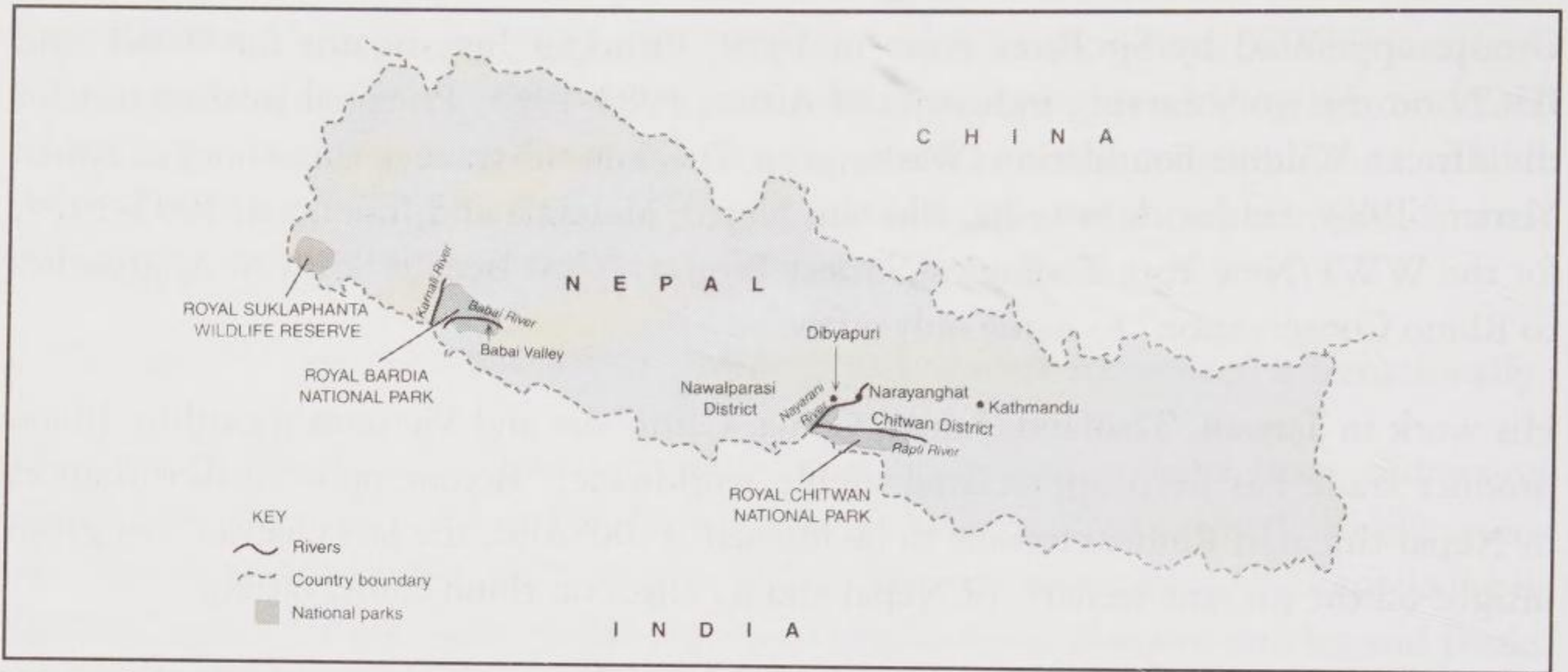
Dr. Esmond Bradley Martin was the United Nations Special Envoy for Rhino Conservation. He was educated to be a geographer and has traveled all over the world. He has been working in the field of conservation for more than 30 years and is still active. His great achievements in the field of research and conservation are working as a Principal Investigator for the World Wildlife Fund and IUCN for various studies of the international trade in wildlife products, 1979-1991; Honorary Consultant to the Species Survival Commission of IUCN as a member of the African Elephant Specialist Group (Consultant for the study of some geographical and historical aspects of the African ivory trade), appointed by Sir Peter Scott, 1977-1991; Specialist Honorary Consultant to the Species Survival Commission of IUCN as a member of the African Rhino Specialist

Group, appointed by Sir Peter Scott in 1979; Principal Investigator for WWF and IUCN on the ivory carving industries of Africa, 1983-1985; Principal Investigator for the African Wildlife Foundation (Washington, D.C.) on the trade in rhino horn in North Yemen, 1983; fieldwork in India, Bhutan, Nepal, Malaysia and Indonesia, 1993-1994, for the WWF/New York Zoological Society Project: "Cost Benefit Study of Approaches to Rhino Conservation" to name only a few.

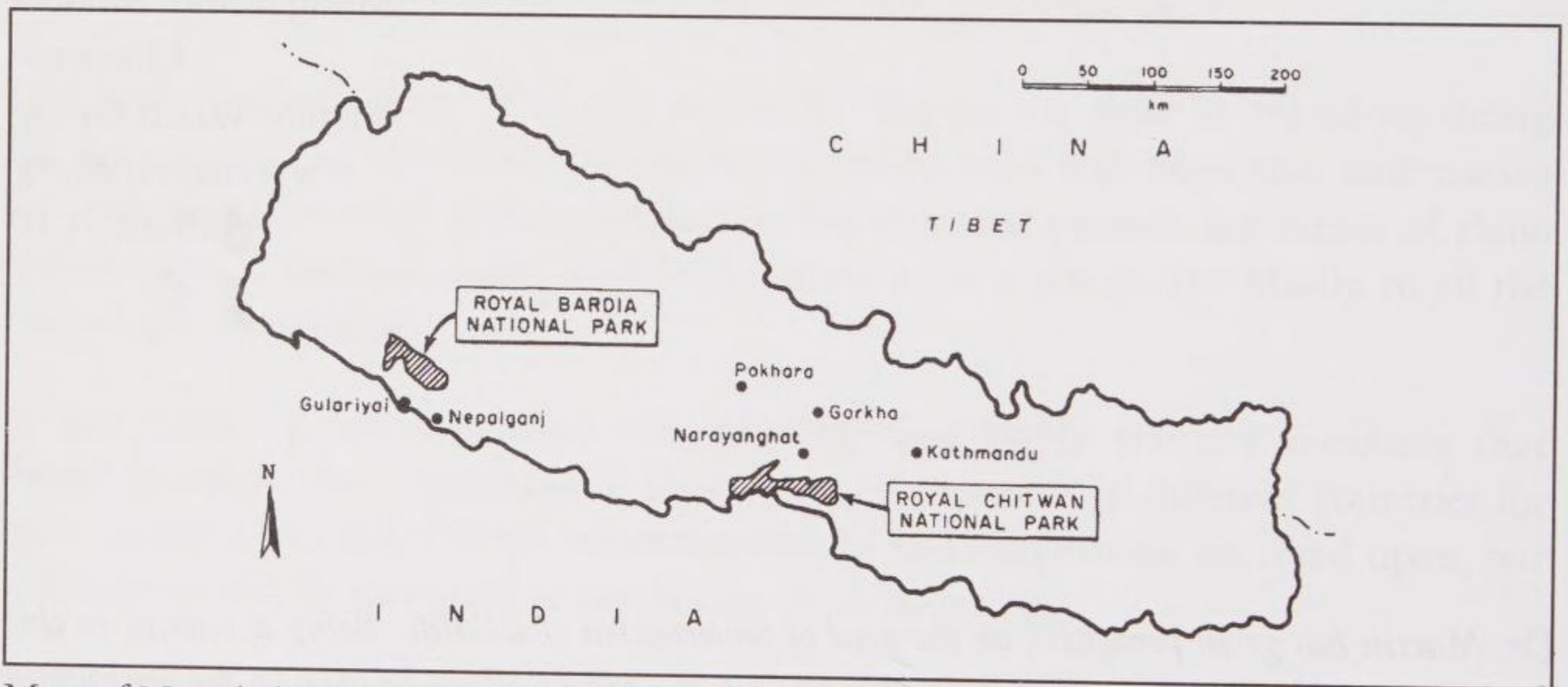
His work in Taiwan, Thailand, Japan, China, Cambodia and Vietnam regarding Rhino product trade has been appreciated highly worldwide. "Recent political disturbances in Nepal threaten Rhinos: lessons to be learned" (2008/09), the last chapter, has given insight on the present scenario of Nepal and its effect on rhino conservation.

Mangal Man Shakya
Chairman
Wildlife Watch Group
www.citesnepal.org
February, 2010

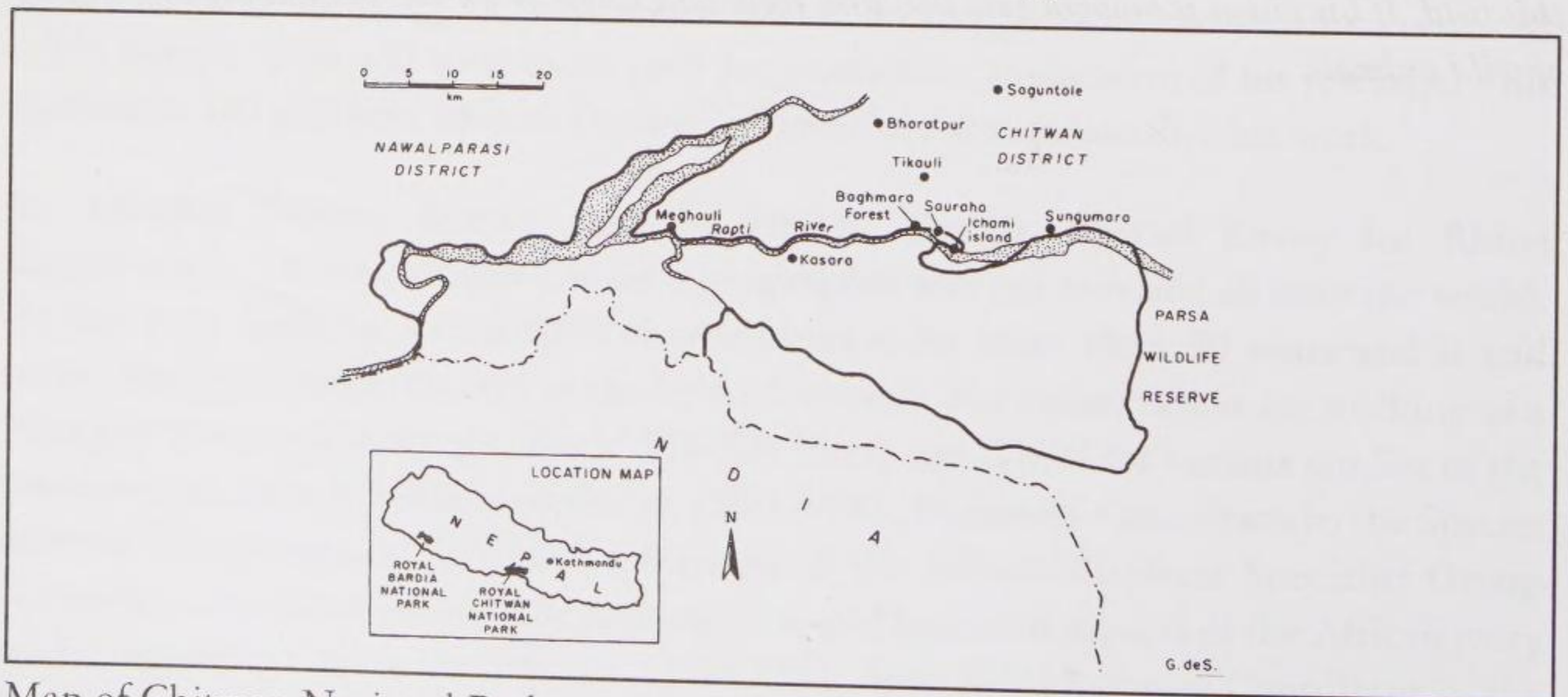
Dr. Martin has given perception on the need of conservation of wildlife. Being a veteran in this field, he has great knowledge and his understanding is a gift to all the people who are working in this field. If his vision is brought into life, then there will surely be an end to poaching and killing of wild animals.



Map of Nepal showing location of parks and reserves where rhinos are found



Map of Nepal showing location of main rhino horn trading centres



Map of Chitwan National Park

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1 Religion, royalty and rhino conservation in Nepal

(Oryx, January 1985)

EBM

Abstract

For religious, medicinal and decorative purposes, the Nepalese use more parts of the rhino than any other people in the world, but only a very few rhinos have recently been killed there. Moreover, since 1976 the rhino population has been growing by about eight per cent a year and when the author visited Nepal in 1982 there were approximately 375, which provides an exception to the commonly held belief that government officials in Third World countries are unable to protect rhinos in the wild. The author, who is a geographer, explores the fascinating background to a successful conservation story.

The demand for rhino products in Nepal

The Nepalese have been using rhino products for many generations. Today the most widely used rhino commodity in Nepal is the hide, which plays its most important role in an elaborate religious ceremony, called *Shradda*, performed by both Hindus and Buddhists in Nepal to commemorate parents or grandparents on the anniversary of their deaths. It is believed that a piece of horn or skin, shaped into a container to hold rice, water and some flowers, will attract the attention of the spirit of the dead. Although rhino horn would be preferred to skin in this ritual, no one other than King himself is allowed to possess any rhino horn in Nepal now (unless it is an antique carving).

Rhino skin is also used to make bracelets, earrings and walking sticks, and in the recent past many more items, some utilitarian, some decorative, were in vogue. In 1938 when Kiran Shumsher Rana, the son of the Prime Minister then, shot a rhino in southern Nepal, he gave almost all of its skin to a craftsman in Patan to make a spice container, a flower pot, picture frames, two table lamps, a chandelier, a bowl and a jewel box, all of which he still keeps as very special treasures. In the middle of the nineteenth century many hundreds of rhino-hide shields were made, in India as well as in Nepal. The Indian shields, mainly from Rajasthan, were sometimes decorated with gilt, but the Nepalese shields, made in Patan, the city of craftsmen, were usually unadorned. Rhino hide was ideal because it is strong enough to deflect arrows and sword blows and there may have also been a belief that it brought warriors luck. Today, one can see more than 50 Indian



A skilled craftsman in Patan made all these items from the hide and a foot of the rhino that General Kiran Shumsher Rana shot for his Blood Tarpan ceremony.

and Nepalese rhino-hide shields in Kathmandu's National Museum. In Kathmandu I found for sale a rhino product that I had never seen elsewhere in Asia, rhino umbilical cord, which is tied around the waist as a remedy for gastric upsets and tied around a small child's arm to prevent crying.

When a rhino dies of natural causes in the Chitwan valley, the park authorities remove the horn and hooves, which are royal trophies. During the Rana rule, horn and hooves were held in a store in the Hanumandhoka, but then a certain amount did make its way onto the local market. For the past 10 years all rhino horn and the hooves have been sent to the King's Wildlife Office inside the palace. Traditionally in Nepal, people have used rhino horn and hoof for medicinal purposes, but nobody was willing to admit to me that this still occurs, probably because of the stringent laws against possession of raw horn or hoof.

One widely available rhino product in Nepal, the collection of which poses no threat to live rhinos, is urine. Substantial quantities come from the animals in captivity in Kathmandu's zoo, and Chitwan park employees often collect it in the field. Whenever my elephant handler took me out he carried a bottle with him. When we came across a place where a rhino had recently urinated, he gathered up the liquid or, if it was embedded in sand, he stuffed the sand into his bottle. He explained that he would later place the sand in a strainer and pour a little water through it to extract the urine. The diluted urine, he maintained, was still useful. Nepalese drink rhino urine as a relief from asthma attacks, congestion and stomach disorders, apply it to the skin to prevent

infection in wounds and soothe sore muscles, and sometimes put drops of it inside the ear to relieve earaches. From two different sources, I heard that rhino dung can be mixed with pipe tobacco and smoked to alleviate stomach pains. However, I do not think that this is a common practice because I never saw anyone bother to collect the dung, and it was certainly easy to find.

When the park authorities have removed a dead rhino's hooves and horn (and usually most of the hide as well), they notify nearby villagers, who collect the remains. Next to the hide, the blood is the most coveted product and the villagers take as much as they can. Later, they dry it in the sun to preserve it. Women are the main consumers of rhino blood; they mix it with water to drink to ease menstrual pain; but men also occasionally swallow some as an aphrodisiac.

Sometimes an old rhino carcass is discovered. Even if it abounds with maggots and flies, it is nevertheless in demand by the villagers, although they will not touch the flesh from any other decaying animal. They arrive en masse, excitedly brandishing their knives all around the carcass, often inadvertently slashing one another in their haste. Rhino meat, which is usually cooked with mustard oil, sliced tomatoes and curry powder, is believed to confer immunity to serious diseases. Rhino liver is eaten to cure tuberculosis, dysentery and, occasionally, to speed up the elimination of after-birth.

The bones are also very important and the most desirable is that from the knee-cap, which is fashioned into an oil lamp for use during religious festivals. Other bones are carved into finger rings to keep away evil spirits. Some are made into charcoal, the fumes of which are believed to cure diseases among penned cattle. In some cases, the penis from a dead rhino is taken. I saw a few dried ones for sale in Kathmandu, and I was told that older men boil them in water and eat them to try to cure their impotence. A few people use them like the umbilical cord, tied around their middle to alleviate stomach pains. In Bodhnath, a shopkeeper showed me the jaw from a rhino, and he said that votive statues of gods and goddesses are carved from rhino teeth, although I never saw any.



General Kiran Shumsher Rana, the son of a Prime Minister, shot a rhino in 1938 for his Blood Tarpan religious ceremony. In 1982 photograph, he displayed for Esmond Bradley Martin some of the items he had made from that rhino.



In the 1980s people could purchase from pedlars 100 grammes of a rhino's umbilical cord for about \$ 23 on one of Kathmandu's main streets. They would eat it to alleviate stomach pain.

Prices for rhino products in Nepal

By far the most valuable rhino product in Nepal is raw horn. Although demand for it is small because it is regarded as almost impossible to obtain under present circumstances, Nepalese traders admitted that they have occasionally dealt in raw rhino horn in recent years. They claimed that its wholesale price in 1982 was \$7000 a kilo, which probably reflects the demand from businessmen in India, who put it on the international market. In 1981 the horns were removed from two rhinos that died of natural causes before the park staff found the carcasses, which indicates that some still reaches the black market.

On the other hand, in the only known instance of rhino poaching in recent years

in Nepal, the poachers received just \$378 for a 250-gram horn - less than one-quarter of its wholesale value in Kathmandu. In January 1982 three of the poachers involved in this case were apprehended when they were attempting to hunt another rhino. I was permitted to question them and discovered that they had sold the horn of the animal they shot in April 1980 to a butcher in Narayanghat. Since it had been a successful venture, and as someone had promised a much higher sum, they were trying their luck a second time. They had not entered the park on either occasion, but kept near the village of Tikoli where rhinos often wander. They undoubtedly faced imprisonment for three to five years, plus a huge fine which none of them would be able to pay. They would be forced to beg the money from their families, whose only income came from the few crops they grew for local markets. The poachers realised that their lives were in ruin and they gained resentment rather than sympathy from their peers.

The Chitwan Park authorities proudly boast that not a single rhino has been poached within the Park's boundaries since 1976; moreover, it is generally accepted that the rhino killed in April 1980 was the only one poached outside the Park between 1979 and early 1982.

Thirty years ago, Nepalese carvers could purchase Asian (they never use African) rhino horn for about \$630 a kilo. However, it was rare for them to do so; instead, members of the aristocracy who hunted rhinos commissioned the carvers to make ceremonial



Items made of rhino hide, such as these containers, are very rare to see nowadays in private collections or in antique shops in Kathmandu.

bowls out of their trophy horn. The Buddhist Silpakar family in Patan was famed for its expertise in working rhino horn, and Ratna Lall Silpakar told me that he had carved nine cups a year until the Rana regime fell. It took him just over two weeks to make one decorated with motifs relating to the god Vishnu. In 1951 such a cup was worth \$1000; today it would sell for \$2000 in an antique shop in Kathmandu. Other antique rhino horn carvings available include ceremonial rings; and kukries, Nepalese traditional knives with rhino horn handles, vary in price from \$90 to \$200.

While rhino-hide shields were probably not made in India after the turn of the century, three families in Patan, including the Silpakars, continued to produce them until around 1945. They paid \$8 in 1940 for a piece of hide sufficient to make one shield. To render it pliable, they soaked the raw hide in water for several days then placed it between blocks of wood to dry it in the exact shape wanted. Afterwards, they trimmed the edges, sand-papered and polished the shield, sometimes adding charcoal for a black finish. Metal bosses for the inside handles were purchased from blacksmiths and attached to the shields by the artisans. The Silpakars sold their shields for between \$15 and \$20 in the 1940s. Today, one can purchase rhino hide shields that were made around that time for \$45 to \$300 .



General Kiran Shumsher Rana personally designed this elaborate lamp, having a craftsman make it from the rhino killed for his Blood Tarpan ceremony.

From the rhinos that die naturally there is ample hide to supply the markets in Nepal today. In fact, it is very widely available and the cheapest I have seen anywhere. A very tiny piece, but large enough for a *Shradda* ceremony, retails for as little as eight US cents, and 10 grammes of rhino hide sold in a medicine shop in Kathmandu are only \$1.60. Many bracelets, which are worn for good luck, are still made out of rhino hide; a plain one in Southern Nepal costs just \$2.25, while one with a silver clasp retails for \$35. In various parts of Kathmandu itinerant sellers of traditional medicine, who display their commodities on the open ground, on the side of the pavement or in a public square, sell the zoo's rhino urine (85 cents for a whisky bottle filled with it - double the price 10 years ago) and rhino

umbilical cord (\$3.00 for a small piece). In the smaller antique shops of Kathmandu and Bodhnath, a variety of objects made from rhino products can be purchased, the most popular being bowls and cups made from horn, hide or bone; both tourists and wealthy Nepalese buy these. Some of the most attractive items are bowls carved from rhino hoof. An outstanding one had a 7-cm diameter and was lined in silver; it was priced at \$100. There was an exquisitely made box carved out of rhino hoof, with a carved buffalo bone lid, which was selling for \$270. Rhino hooves were formerly very cheap; in 1972, following a period of heavy poaching in Chitwan, illegal hunters sold them for only a dollar each to dealers in Kathmandu, who in turn rethem for \$3. Now, of course, raw rhino hooves are rare. I was offered a large rhino bone pendant for \$15 and a 50-cm long dried rhino penis for \$190. The merchant, who had a rhino jaw complete with a full set of teeth, assured me that his price of \$31 was a real bargain.

Rhino conservation

The demand for rhino products in Nepal comes mainly from the people who look upon this animal as a special beast, one whose skin, bone, hoof or horn can intercede with spirits of the dead, and which can also be used to guard against evil, prevent and cure certain diseases. That the people do not slaughter rhinos wholesale today for their own



This photograph of a gang of rhino poachers with the authorities who arrested them was taken in 1982 at Tikauli, just outside Chitwan National Park.

needs or for financial gain is the result of an enlightened conservation policy that came into effect in the early 1970s.

Before then, the outlook for rhinos in Nepal was precarious. In the wake of political turbulence during the 1950s, poaching reached unprecedented heights. The wildlife expert, E.P. Gee believed that 75 rhinos were killed illegally in 1960 alone. A helicopter census of Chitwan in 1968 came up with a figure of 81-108 remaining rhinos, undoubtedly an underestimate, since the population was at least 280 in 1977. Nevertheless, that census indicated a severe loss from approximately 800 rhinos in 1950.

The situation turned around completely with the restoration of law and order under a powerful king. Chitwan, the former royal hunting preserve for kings and Ranas, which was subjected to massive settlement schemes in the 1950s and 1960s resulting in half its area being put under agricultural crops, became a national park in 1973. Today, inside this Park, rhinos are protected by 500 armed men of the Royal Nepalese Army who carry out foot patrols twice daily; outside the Park's borders, an additional force of 200 men from the Royal Nepalese Forest Department's Rhino Patrol stand guard.

The greater one-horned rhinoceros must have full protection in order to thrive in Chitwan (there are 150,000 more people in the area than in 1961 and there are now roads linking

the valley to Kathmandu, rendering the movement of illegal goods much easier and quicker). Yet, the expense and manpower involved are much greater than one would expect to find in a less developed country. True, international conservation bodies have helped, but the motivation to rebuild the rhino population has come from the King, who rules with almost absolute authority and it is his Government that has supported and enforced the laws concerned with rhino safety. Until poaching was brought to a halt, the Government gave rewards of sometimes over \$400 to people who provided information that led to the arrest of rhino poachers. Today, if a person is caught in possession of an illegal rhino horn, the law courts will imprison him for a period of up to five years and, in addition, may impose a fine of \$400-\$1500. The people have learned how serious rhino poaching is now; they are afraid of the penalties and since they also know that they can be punished as accomplices simply by knowing that someone is attempting to break the laws, they are even likely to report suspicious behaviour to the authorities.



Several families in Patan specialized in making shields from rhino hide at least until mid-1940s.

However, the management policy of Chitwan is not wholly restrictive to the people; there are both direct and indirect benefits to them. Aside from a growing number of jobs engendered by the tourism industry in Chitwan (the yearly number of visitors increased from 836 in 1974 to 8094 in 1981), the local people are allowed to take products from the rhino carcasses, a practice that has kept prices for these commodities considerably lower than in other rhino-consuming countries and has reduced the desire to poach. Also, the park is opened for a short period to allow local people to cut tall grasses and reeds, which are used for roofing houses and building fences; as many as 55,000 people whose land is entirely under food crops took advantage of this offer in 1982 and cut many thousands of tonnes.

The King has also benefitted from the support he has given to rhino conservation. On 9 January 1981, when rhinos were no longer endangered he was able to perform a sacred rite that all Nepalese kings are obliged to do once in their lifetime. This is the blood



In the 1980s when carcasses of rhinos were found, the hide would be stripped off and dried on rooftops in Tikauli for preservation.

Tarpan ceremony, and it consists of offering rhino blood libations to the Hindu gods. King Birendra, accompanied by Queen Aishwarya, other members of the royal family and several Hindu priests, were mounted on elephants and led by the Park's people, also on elephants, to a large male rhino outside the Park's northern boundary. Altogether 26 elephants were used to encircle the rhino to prevent its escape and to allow the King to shoot it at close range. On the following morning, the fallen beast was dragged to the Rhapti river near Kasara, where a group of men disembowelled it. The King, dressed in a simple white robe, entered the abdominal cavity, knelt down and filled his cupped hands with rhino blood, which he offered to his gods in memory of the late King Mahendra, his father. Hindu priests chanted prayers throughout the ceremony of the rhino sacrifice.



This spice container, crafted from a rhino's foot, dates back to 1939.

Although this little known rite may appear a negative factor for rhino conservation, it actually is a major impetus to make certain that rhinos are plentiful enough to allow its performance, which is regarded as an extremely important event. It is carried out just once in a king's life and only a mature male rhino, never a female, is sacrificed. A small price to pay in return for the protection granted to the rhino population as a whole, it epitomises the role of religion and royalty in Nepal's rhino conservation.



2 Nepal's rhinos and tigers are poisoned by poachers

(International Zoo News, October-November 1991)

EBM and Lucy Vigne

Nepal, despite being one of the poorest countries in Asia, has been one of the most successful at conserving its rhinos and tigers. Nearly all the 400 or so greater one-horned rhinos in Nepal inhabit the Royal Chitwan National Park. Chitwan and the surrounding area is home also to perhaps half Nepal's Bengal tiger population (about 170 animals). The King has a personal interest in conservation particularly for the rhino, which is of religious importance in Hinduism. Thus, Chitwan was until recently heavily protected by the Forest Department's guards and by the army, a total of nearly 900 men.

During the late 1980s, there was growing political unrest, culminating in early 1990 in riots and a partial breakdown in law and order. The King's power diminished, and an interim government took over with less interest in conservation. As a result the number of men patrolling Chitwan was reduced and new poachers took advantage of the situation. Two of Nepal's largest and most spectacular animals - the rhino and the tiger - came under threat.

In the past, tigers were occasionally poisoned when they became a nuisance to the local farmers by attacking cattle. A farmer would put poison in the carcass of a dead cow to kill the offending tiger. During 1988 and 1989, however, over 10% of Chitwan's tiger population was poisoned, but not because they were killing cattle. Poachers for the first time were taking the bones to sell for about \$130 per kilo to traders to send through Tibet to China, where they are consumed as a medicine to help rheumatism. In 1990, 25 carcasses were found in Chitwan of tigers and their cubs which had been poisoned.

Rhino poaching has also increased during this politically unstable time in Nepal. In 1990, seven rhinos were killed, four by eating poisoned food, the first time this method of poaching has been used on the rhino. When rhinos wander out of Chitwan Park to graze on crops nearby, the local farmers put poison in a maize cob or pumpkin which the rhino eats. The rhino can take five hours to die and may wander back into the Park where the body is discovered. Nearly all the horns from these killed animals were found by the poachers, who hacked them off to sell for about \$10,000 a kilo. They sell for about double this wholesale in Taiwan. Although other products from the rhino are valuable (the skin sells for over \$2,000 a kilo retail in Bangkok), poachers do not have



Rhino hide occasionally comes onto the market in Nepal. Craftsmen have traditionally made picture frames from it.

the time to take anything else, for fear of being caught.

The Park officials are extremely worried about this acceleration in poaching. They feel under-manned and under-equipped to combat these criminals. Also, and perhaps most regrettably, their once very effective intelligence-gathering system has been dissolved, because the staff could not conform with the complicated official system of payment, and consequently were not spending the allocated money. It is generally agreed

that an intelligence network is the most cost-effective and efficient way of catching and preventing poachers. For example, in 1973, when rhino poaching was last a threat in Chitwan, the Fauna and Flora Preservation Society of London donated several hundred pounds to pay to informers: 17 poachers were caught and the poaching problem was then resolved. The International Trust for Nature Conservation, in England, gave \$67 in January 1991 to pay four men to collect information on tiger poaching in local villages: this immediately led to several arrests, and has provided a deterrent to would-be poachers during this critical period.

However, \$3,000 is now needed to fund a full intelligence network and to pay informers for the next three years. This is a small sum when one considers that if a pair of greater one-horned rhinos were to be sold from Chitwan to a zoo (as recently occurred to Singapore Zoo), they would be worth about \$250,000. From the economics argument alone, \$3,000 to protect the 400 rhinos in Chitwan is minuscule. A donor is urgently sought by the Park staff to enable a network to be re-established which can save rhinos' and tigers' lives at this precarious time. This assistance would be very well deserved when one considers Nepal's excellent track record in protecting these animals.

Apart from the 1,500 or so greater one-horned rhinos in Assam, India, these animals in Chitwan are the only sizeable population left of this species in the world, and they need all the help they can get.

[Postscript: On 10th May 1991, the Royal Nepali Army arrested 24 poachers equipped with 22 muzzle-loaders inside the Royal Chitwan National Park; they were hunting sambar, chital, wild boar and sloth bear, mainly for meat, but would not have avoided a tiger that came out in the beat.]

3 The poisoning of rhinos and tigers in Nepal

(Oryx, April 1992)

EBM

Abstract

*Although it is a poor country, Nepal has been responsible for one of the greatest rhino conservation success stories. In 1968 its population of greater one-horned rhinoceros *Rhinoceros unicornis* was estimated at 81-108 individuals; by 1990 the population had increased to 400, a tremendous achievement for a country with very limited financial resources. However, in 1990 the government collapsed and the enforcement of law and order was not very effective. Rhinos were poached for their horns and tigers for their bones. Poachers started poisoning rhinos, apparently copying the methods used previously for killing nuisance tigers. The author, who visited Nepal in 1991, reports on these new threats and discusses what needs to be done to remedy the situation.*

The rhinoceros is of very great religious and cultural significance in Nepal. Each Head of State must perform a religious ceremony at least once in his life, in which he must kill a rhino and offer its blood to his ancestors. Ordinary Nepalese also sometimes perform a similar ceremony using rhino skin. The rhino is so revered religiously and culturally that every part of the rhino is eaten or used in some way when opportunities arise (Martin, 1985).

Rhino protection and poaching

Since the early 1970s the Nepalese government has allocated a considerable amount of money and human resources for the protection of the rhino. In 1975 200 armed Royal Nepalese Army personnel were permanently stationed inside Chitwan National Park, which, then contained the country's only rhino population. By 1982 this force had increased to 500 personnel, supplemented by more than 100 armed members of the Gaidi Gasti (the Forest Department's rhino guards) who were stationed on the outskirts of the park to prevent rhinos being killed when they strayed outside its boundaries to eat crops. As a result of this large anti-poaching force, together with the efforts of the regular park staff, and due to strong support from the King, there was no evidence of poaching between 1977-1983.



Poaching is the main threat to rhinos in Nepal. In 1991 Dr. T. Maskey and Tika Ram Adhikari at Tikauli recorded every known case, listing the weapons used and cataloguing the horns recovered.

Despite the continued protection, however, 21 rhinos were poached in and around Chitwan National Park between 1984 and 1990. One cause was probably the rising price of rhino horn on the world market, coupled with the fact that the people organizing the poaching developed stronger and more sophisticated connections with traders in India. The biggest problem, however, has been the political upheaval, which started in early 1990 and resulted in the replacement of the government and a reduction in the King's power. The police, the army and the law in general lost influence and some criminals took advantage of this situation and turned their attentions to rhinos and their valuable horn.

The first incident of this particular wave of poaching occurred on the night of 26 January in Patan's Central Zoo near Katmandu. A 15-year-old female rhino and a 6-year-old male were killed with rat poison, containing zinc phosphide. The animals presumably took several hours to die and the poachers had time only to remove the horn from the male before escaping. Between 10 May and 31 July 1990 five more rhinos were killed in and around Chitwan. All but one were killed during the monsoons, when

many government employees traditionally take leave and when patrols are hampered by flooded roads. The rhinos are also at greater risk at this time because they frequently leave the park to feed on crops. On 10 May a male rhino was found dead with its horn removed, 14 km from Tiger Tops Jungle Lodge in western Chitwan. The cause of death was probably insecticide-laced vegetables on the outskirts of the park. On 8 June another animal was found shot, minus the horn, in the middle of the park, and on 7 July a third was found, also without its horn, just outside the park, but the cause of death was not established. The fourth rhino was found on 28 July outside the north-east corner of the park by guards, who also discovered the cause of death - a pumpkin filled with liquid insecticide. On 31 July, near to where this animal had been poisoned, a fifth rhino wandered onto a farm and was killed by a villager with a spear; no attempt was made to remove the horn.

Poachers are only occasionally captured. Four of the poachers who killed the fourth rhino were arrested by the Gaidi Gasti in August 1990 after extensive detective work and the horn was recovered from a pit next to the house of one of the poachers. Reportedly there were six men involved but the two others have not been caught.

Although other parts of the rhino are valuable, poachers only remove the horn, perhaps because of lack of time. They sell the horn to middlemen, who in 1989 were paying the equivalent of \$US8000-10,000 per kg. This is a huge sum compared with local wages for unskilled work; even a game scout is paid less than the equivalent of \$US400 a year. Businessmen who buy the horn live in Narayangadh and Tadi bazaar, both close to Chitwan. The horn is smuggled out of Nepal, usually via India to Taiwan, where in 1989-1990 traders were paying just over the equivalent of \$US20,000 a kg.

Apart from the breakdown in law and order, there have been difficulties in carrying out anti-poaching activities. Although in 1990 700 army personnel were stationed at 30 posts in the park, a senior army officer complained to me about shortages of transport and radios, as well as a breakdown in the intelligence gathering system. Information about potential poachers was no longer reaching the army, and officers claimed that it was not their responsibility to leave the park to collect it but rather that of the park authorities and the Gaidi Gasti. Army personnel have rather poor relations with villagers because they are sometimes arrogant, especially when they arrest local people for illegal tree-felling and livestock-grazing. The Gaidi Gasti unit is also struggling to carry out its patrol work. Their official force of 185 men was reduced to 124 by January 1991 because all recruitment was halted in mid-1990. Patrol work is limited by a shortage of vehicles and a lack of domesticated elephants, and the unit also does not have an intelligence-gathering system.



In 1991 government officials in Tikauli put on display for Esmond Bradley Martin their collection of rhino horns.

Chitwan's own guard unit is also undermanned, numbering only 45 in January 1991, with only 35 on duty on any one day. This is one-third of the number required (T.R. Adhikari, pers. comm.). None of the park staff is armed so they can do little if they encounter armed poachers. Their role now is mainly administrative and because they no longer have an intelligence-gathering system, their effectiveness is reduced. Several well-informed people not working for the government confirmed my own impressions that illegal activities had increased in the park since my previous visits in 1982 and 1986.

One of the greatest problems for anti-poaching operations is that there is no longer adequate funding for the intelligence-gathering networks, which used to be very effective against poaching in Chitwan. The government severed funds to the park in 1988 because the staff were unable to conform to the very complicated official payment system. Some members of the Parks Department are concerned that, while 85 per cent of its total budget (Rs139,931,000, about \$US4,600,000 for the fiscal year 1990/91) is allocated to the army to patrol national parks and wildlife reserves, rhino poaching is, nevertheless, accelerating.

Tigers

Rhinos are not the only valuable and endangered species being killed. There are about 170 Bengal tigers *Panthera tigris* in Chitwan National Park and adjacent areas to the east and south, extending into a small part of India. This is about one-half of Nepal's total tiger population (C. McDougal, pers. comm.). In western Chitwan, in 1989, McDougal discovered the remains of a poisoned tigress, with two poisoned mongooses nearby. Two adult male tigers disappeared in the same locality within a day of each other, and two more tigresses with six cubs also perished in that year. In 1990 14 tigers (six adults and eight cubs) vanished, also in the western part of the park. McDougal believes that at least 12 of these 25 tigers were poisoned and further casualties probably lie undetected in the dense vegetation in less visited areas of the park. National Parks officials agree that tiger poaching has increased in Nepal. According to the Assistant Warden of Chitwan (T.R. Adhikari) at least 10% of the Park's tiger population was poisoned in 1988-1999.

Historically villagers have killed tigers on the edge of the park because of livestock losses. Carcasses of cattle or water buffalo killed by tigers were laced with poison so that when the tiger returned to feed it was poisoned. In 1989, however, poachers started to kill tigers for economic gain using the same method, by buying old cattle from farmers for use as bait. Most of the tiger poaching occurs on the east side of the park and in the adjacent Parsa Wildlife Reserve (C. McDougal, pers. comm.).

In January 1991 five poachers who had just been caught said that they had killed three tigers, one inside and two outside the park, by lacing cattle carcasses with poison. The men, most of them poor local farmers, were promised the equivalent of \$US130 a kg for the bones, the only product of economic importance to the local traders. The tiger bones are usually sent via Tibet to China, where there is a major traditional medicine market for them, mostly for remedies to relieve rheumatic pain. Park officials reported that 20 sacks of tiger bones were confiscated at a post office in north-west Nepal near the Tibet border in 1988. There is also some evidence that tiger bones from India pass through Nepal to Tibet.

The Future

Funding

The recent upsurge in rhino and tiger poaching in Nepal needs addressing urgently. The most important and simplest step would be to re-establish the intelligence-gathering network by allocating enough money to pay informants for reliable information about poachers and traders. In 1973, when rhino poaching was once before serious in Chitwan, the FFPS Oryx 100% Fund donated £250 to anti-poaching work; this relatively small amount of money was responsible, in 3 months, for the apprehension of 17 illegal

hunters and the end of the problem at the time. In January 1991, in order to help combat the increase in tiger poaching, the UK-based International Trust for Nature Conservation gave the equivalent of \$US67 to pay four local men to collect information on suspects. That same month evidence from these informants led to the arrest of the five poachers mentioned earlier. This illustrates what excellent results can be achieved at a relatively low cost. Re-establishment and operation of the intelligence system would cost \$US3000 over a 3-year period, an insignificant amount compared with the export value of a breeding pair of rhinos, which is about \$US250,000.

Legal action

Fines and prison sentences for poaching offences should be increased significantly and maximum publicity should be given to poaching-related convictions to deter other would be poachers.

Park management

The Forest Department's Gaidi Gasti unit outside the park and the army within it must improve their patrolling. In order to do this they require modern equipment, vehicles and trained elephants, particularly in the monsoon period when the majority of rhinos are killed. Perhaps the tourist lodges, closed during the rains, could lend their trained elephants to the army. The staff need better training and there must be more co-operation between all the units concerned with anti-poaching activities

Local people

The negative attitude of people living on Chitwan's borders should be tackled. The thousands of destitute villagers living near the park receive very little economic benefit from Chitwan, and they are prevented from grazing their livestock there. Foreign tourists visit in ever greater numbers - 36,072 in 1990 compared with 836 in 1974 - but the additional employment opportunities are not sufficient to satisfy the demand from the large number of villagers. One benefit villagers do receive is the right to cut as much grass and reeds as they wish for thatching during 15 days each January for a fee of Rs5 (approximately \$US0.17). A major expense borne by villagers, however, is crop damage by rhinos. Park staff must attempt to reduce this devastation, perhaps by using a simple electric fence in the worst affected areas.

Education

The National Parks Department should set up an education programme to promote awareness of the value of Chitwan to the local community and to the country as a whole.



In order to protect rhino horns from insect damage, officials at Tikauli in 1991 washed them in disinfectant.

Conclusions

If Chitwan National Park is to survive in the long term, the local villagers must share in the economic benefits from the park. The government authorities should endeavour to develop policies that protect Chitwan's wildlife and simultaneously improve the well-being of the human population that surrounds the park. Without improved co-operation between the authorities and villagers, poaching will inevitably continue to threaten two of Indo-Malaya's most endangered species.

Acknowledgements

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4 Nepal's rhino success story - lessons for Africa?

(*Swara*, May/June 1994)
EBM and Lucy Vigne

Most people's image of Nepal is of high rugged mountains, and only a few realize that there is a lowland area in southern Nepal bordering India which is home to nearly 500 greater one-horned rhinos (commonly known as Indian rhinos). His Majesty, the King of Nepal, has taken a great interest in conserving his country's rhinos, and since the late 1960s their numbers have more than quadrupled. Despite being one of the poorest countries in the world, the Nepalese have managed the rhinos almost entirely by themselves with very little foreign expertise or external funding assistance, a lesson to be learned, perhaps, in Africa.

From a population of about 800 animals in 1950, after the overthrow of the feudal Rana regime in 1951, their numbers were whittled down by poaching, land clearance and human settlement to perhaps a mere 100 rhinos by 1966. His Majesty's Government then gained control of the country and by 1973 had gazetted Chitwan National Park to safeguard the remaining rhinos. A special rhino patrol unit was established under the Forest Department that year to protect rhinos wandering outside the Park; and in 1976 the Nepali Royal Army was sent to patrol inside the Park. Nepal is the only country in the world to have some of its army permanently stationed within most of its parks, and this is surely one of the reasons for the country's conservation success. Poaching thus declined dramatically and not a single rhino was illegally killed until 1984. As poaching pressure once more resumed, his Majesty's Government established a whole battalion of 800 men to guard Royal Chitwan National Park. These soldiers, plus a few patrolling Park staff, have enabled there to be almost one man per square kilometer on duty inside the Park - a significant manpower which has proved effective.

A poaching gang is usually organized by a local leader who provides the guns and ammunition, and since 1992, automatic rifles have been most commonly used. Other rhino poaching techniques in Nepal include deep rectangular pits on regular rhino pathways in which the animal falls, as well as wire nooses and heavy spears attached in trees again over a rhino path, and also poisoning, whereby pumpkins and maize growing on the edge of the Park are laced with poison in an area visited by rhinos.

Despite the high concentration of rhinos and the many poaching attempts, from 1984 to the end of 1993, only 4.7 rhinos have been poached per year in and around the Park. This is a great achievement considering the very high price offered to a gang of local, poverty-stricken poachers: from around \$1,000 to \$2,000 - for an average 700 gramme horn in 1993. This is about ten times more than a poaching gang is offered in Kenya.

The most cost-effective anti-poaching strategy the Parks and Forest Departments have co-ordinated over recent years has been an intelligence system whereby informers in villages around the Park are paid for information leading to the arrest of poachers. Tika Ram Adhikari, Assistant Warden, stated in an interview in January 1994, 'If I were given \$4,000 each year, I could catch almost all the poachers'. The UK-based International Trust for Nature Conservation (ITNC) has given about \$550 cash a year since 1991 to pay for information, a vital assistance since the Parks Department would have great difficulty accounting for this money. Due entirely to ITNC support, eight rhino poachers and eight tiger poachers were caught in 1991, three tiger poachers in 1992, and in 1993, with additional funding of nearly \$3,000, a record 37 rhino poachers and three tiger poachers were apprehended and await trial. The effectiveness of information gathering cannot be under-estimated. This confirms Richard Bell's work in southern Africa which has shown that one day of investigations produces as many arrests as 28 days of patrolling in the field. Some countries with rhinos in southern Africa are now involved in this form



A greater one-horned rhino is easily spotted in the shorter grasslands.

of anti-poaching, which has been especially effective in Namibia; Kenya has also had success with intelligence. More countries should follow their example.

Another major way the Nepalese have protected their rhinos has been by showing sympathy and support to the villagers around Royal Chitwan National Park. The understanding of the locals is becoming increasingly important as human (and rhino) numbers expand around the Park; 7% of the rhino population, at any one time, is outside the Park creating serious damage to crops, and occasionally rhinos take human lives. Since 1976, an innovative system to gain local support has been adopted by the Park officials: that of permitting villagers to enter the Park for two weeks every January to collect grass and reeds, essential building materials. This benefit is worth \$500,000 a year to the villagers and is highly popular; 65,254 individuals received a permit in 1993 to enter the Park. Such legal benefits are rare in Africa. In Malawi, however, local people are allowed to tend and harvest beehives inside conservation areas. Should more park wardens in Africa think of allowing neighbouring farmers into the parks in a controlled manner to harvest certain resources for local consumption?

Royal Chitwan National Park provides another significant benefit. After officials have removed the horn, hooves and skin from a dead rhino to be kept in stores, they turn a blind eye to locals helping themselves to the blood, urine, meat and other products of the rhino carcasses found outside the Park. These products are prized in Nepal for medicinal purposes, and would be impossible for the villagers to obtain normally, except by stealing.

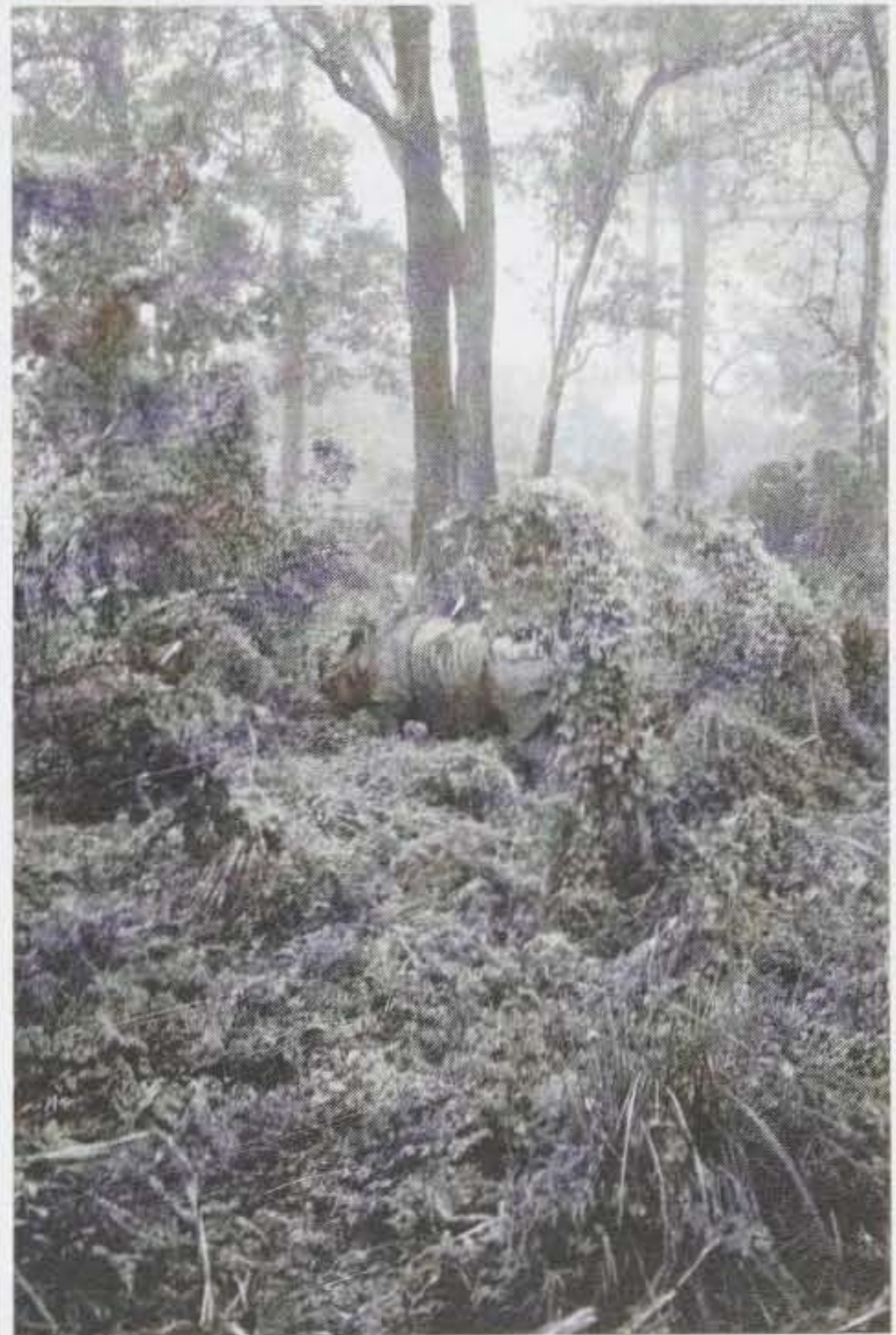
Tourism is another benefit, directly employing 650 people in lodges and camps, and indirectly employing thousands of others. In 1992, 55,335 foreign visitors came to Royal Chitwan National Park. Like Kenya, Nepal greatly encourages foreign tourism.

There are further plans to increase benefits to villagers around Royal Chitwan National Park through public education and by giving a sizeable amount of the Park's revenue to the local community for development projects, instead of to the Central Treasury. Park staff and villagers are planning to establish an 'impact zone' around the Park. Presently illegal livestock grazing, firewood collection and fodder cutting are prevalent within Royal Chitwan National Park, despite the large number of armed guards and the substantial fines given. Other resources obtained illegally from the Park include edible wild plants, medicinal herbs, stems for brooms, canes for baskets, fish and birds eggs. An impact zone, where trees could be planted for firewood and other resources made available, would greatly reduce the need for trespassing within the Park. About 66% of the Park's neighbours are landless, yet on average a household owns 5.5 domestic mammals. Such assistance is thus vital. Further plans are to educate the villagers to shift

from free-grazing of livestock to stall feeding and to use nutritious rice straw as cattle feed as opposed to it being an agricultural wage. Also, improved energy-saving stoves and bio-gas technology based on cattle dung have great potential for success in the Chitwan area. Since 1977, Park staff have organized an annual gathering of local leaders for a two-day 'co-ordination meeting' where participants are encouraged to discuss development issues as well as their grievances and problems. Thanks to the forward-thinking Park staff, who intend to organize the above improvements for the villagers, it is hoped that the local people will increasingly support the Park and its rhinos, rather than feel negative towards them and harbour poachers.

For such a poor country Royal Chitwan National Park has an extremely large budget. The Park's expenditure and its earnings, however, have been very similar during the last few years. In 1993/4 the total budget for Royal Chitwan National Park (an area of 932 km²) worked out at \$867 per square kilometre. This is far higher than for any park in East Africa. The Park's revenue however, mainly from tourism, in 1992/3 was \$959 per square kilometre, mostly due to the high entrance fees charged to foreigners. Royal Chitwan National Park probably produces more income than any other park in Asia with rhinos which helps to justify its large and effective expenditure. Several countries in southern Africa could follow Nepal's example and charge higher fees to foreigners, as is the case now in East Africa.

The year 1992, however, proved an exception concerning the control of rhino poaching in Nepal when 18 rhinos were illegally killed in and around Royal Chitwan National Park, the only year since 1973 that fewer rhinos died of natural causes than from illegal killing. The main reason for this was poor leadership at the time causing a drop in morale and a decrease in motivation of the patrollers in and around the Park. This provides a useful lesson for the future in Nepal: the realization of the importance of strong and effective leadership as to whether rhino numbers actually increase or decrease. This strategy is also applicable to



Alien plant species are a serious threat to the natural vegetation in Chitwan and Bardia National Parks; the most invasive are lantana and mycaenia.

rhino conservation in East Africa. Strong leadership in Kenya has resulted in not a single black or white rhino poached, as far as is known, from September 1991 to 1993.

Nepal's successful rhino conservation efforts in Royal Chitwan National Park enabled his Majesty's Government to establish a second rhino population in Royal Bardia National Park in south-west Nepal. From 1986 to 1991, 38 rhinos were brought to this Park, an area of similar size and habitat to Chitwan. By 1994, the net increase in rhino numbers, however, was only one, with eight rhinos having been poached. The intelligence system needs to be stepped up around the Park to prevent further poaching losses from this small, but dispersed, population. In addition, the Nepalese are the first to agree that a positive attitude of the nearby villagers, by providing them with greater benefits, will ultimately determine the future of the rhinos.

Several significant lessons can be learned from Nepal's successful rhino conservation strategies by Africa's park managers. These include the importance of commitment and good leadership, adequate numbers of well-equipped field staff, an effective intelligence system, and considerable benefits for the people around parks. Nepal is a country which deserves significant praise for its efforts and whose successful rhino conservation techniques should be examined, and where appropriate, emulated by conservationists in Africa.

Thanks are due to the Wildlife Conservation Society (WCS) and the World Wide Fund for Nature (WWF) for funding this work.



5

Good news in Nepal

(*Wildlife Conservation*, July-August 1995)

EBM and Lucy Vigne

A 1994 census of the rhinos in Nepal's Royal Chitwan National Park revealed an increase of about 100 animals from the approximately 365 counted in a 1988 survey. Since the late 1960s the population has increased by an estimated 5.6 percent per year on average.

The reasons for Nepal's rhino conservation success are simple: The federal government has fully supported rhino protection since Chitwan was established in 1973. Despite being one of the poorest countries in the world, Nepal spends nearly \$2,250 per square mile on management and protection of Chitwan. Park earnings, which are mostly from tourism, roughly match these expenditures. Eight hundred soldiers of the Royal Nepali Army are posted in the park, and Forest Department personnel help guard rhinos that stray outside park boundaries. Assistant Warden Tika Ram Adhikari says that "Giving rewards for information is the most cost-effective anti-poaching system." In 1993, \$3,500 was paid to informants, and 37 rhino poachers were caught and are awaiting trial. The International Trust for Nature Conservation, based in the United Kingdom, is largely responsible for coordinating the funding for intelligence work.

Since the late 1970s, the local villagers have been receiving direct benefits from Chitwan. Each year for two weeks in January, tens of thousands of villagers are allowed to enter the park to collect grass and reeds with which to build and repair their houses - a benefit valued at about \$500,000 a year. In addition, if a rhino dies outside the park, staff remove the horn, hooves, and skin, then the villagers can help themselves to the blood, meat, and urine - all much in demand for traditional medicines. Officials hope that helping the people who live around the park will result in a more positive attitude toward the rhinos and that, instead of harboring poachers, the people will help safeguard their natural heritage.



6 Nepal's rhinos - one of the greatest conservation success stories

(Pachyderm, 1995)

EBM and Lucy Vigne

Introduction

Nepal has two national parks inhabited by the greater one-horned rhino, *Rhinoceros unicornis* (see maps). Within the Chitwan valley, the Royal Chitwan National Park was gazetted in 1973 and made a World Heritage Site in 1984. Now covering an area of 932 km², its rhino population has grown in number from around 100 in the mid-1960s to 450 in 1994. This achievement has been due primarily to His Majesty the King of Nepal's commitment in protecting the rhinos, and since 1990, to His Majesty's new government's efforts. This is one of the greatest conservation success stories in the world for the rhinoceros. From 1986 to 1991 38 rhinos were translocated from the Chitwan area to Royal Bardia National Park to form another population. Bardia had been gazetted as a wildlife reserve in 1976, and was expanded to cover 968 km² in 1984, and then made into a national park in 1988 due its large numbers of ungulates and tigers (Upreti, 1994).

Despite Nepal's gradual increase in rhino numbers since the late 1960s, in 1992 18 Chitwan rhinos were illegally killed, the highest number since the 1960s, and poaching increased in Royal Bardia National Park also. Reasons for Nepal's success in curtailing rhino poaching and opinions as to why rhino poaching in Nepal increased in 1992 will be discussed in this paper, as well as recommendations for further improvements to Nepal's excellent rhino conservation efforts.

Royal Chitwan National Park

A general history of rhino poaching and protection in the Chitwan area

In 1950 Chitwan's rhino population numbered about 800 animals (see Table 1). In 1951, the Rana ruling family, Nepal's hereditary prime ministers, was overthrown and many of the rhinos were shot dead illegally in that decade by Nepalese and Indians. The horns were sold in India. There was also massive human settlement at that time



The greater one-horned rhino usually defecates wherever he sees middens (Photo: Lucy Vigne).

due to a malaria eradication scheme and over half the area became agricultural land. Then, realising that the numbers of rhinos had declined to about 300 in the late 1950s and that there had been a 70% reduction in forest and grassland areas, His Majesty's Government of Nepal created a deer park in part of the Chitwan valley. Due to lack of law and order, however, poaching and habitat loss continued. By 1968, there were estimated to be only around 100 rhinos remaining.

Table 1: Number of rhinos in the Chitwan valley, and from 1973 in Royal Chitwan National Park

Year	Number	Comment	Source
1950	800	estimate	Willen (1965), in Laurie (1978)
1957	400	estimate	Stracey (1957)
1959	300	estimate	Gee (1959)
1961	165	estimate	Spillett (1966)
1966	100+	estimate	Spillett & Tamang (1966)
1968	81-108	helicopter census	Caughley (1969)

Year	Number	Comment	Source
1972	120-147	helicopter census	Pelinck & Upreti (1972)
1978	270-310	estimate	Laurie (1978)
1988	358-376	census by photos	Dinerstein & Price (1991)
1994	440-460	ground census	Yonzon (1994)

Table 2: Number of known rhinos poached in the Chitwan valley before 1973, and from 1973 in Royal Chitwan National Park

Year	No.	Comment	Source
1954	72	min. no.poached	Talbot (1960)
1958	60	" "	Gee (1959)
1973	5		D.N.P.W.C. *
1974	2		"
1975	0		"
1976	0		"
1977	0		"
1978	0		"
1979	0		"
1980	0		"
1981	0		"
1982	0		"
1983	0		"
1984	2		"
1985	0		"
1986	3		"
1987	0		"
1988	3		"
1989	1		"
1990	3		"
1991	1		"
1992	17		"
1993**	4		"

* Dept. of National Parks and Wildlife Conservation

** January to November

Traditionally, each head of State has had to perform a sacred ceremony offering rhino blood from a newly killed animal to the Hindu gods; this is called the Blood Tarpan ceremony (Martin, 1985). This has meant that the rhinos have had to be strictly protected for future generations. So, when His Majesty's Government finally gained control of the country, it gazetted Chitwan as a National Park, and a special "Rhino Patrol" or Gainda Gasti was established under the Forest Department in the same year (1973) to protect rhinos that wandered outside the Park. Three years later His Majesty the King stationed units of the Nepali Royal Army inside the Park, enabling the National Parks staff to concentrate their efforts on Park management. There was originally one company, and poachers initially feared the army; no rhino poaching is known to have occurred from 1977 to the end of 1983. Poachers then learned that the army did not patrol very effectively. At least 19 rhinos were illegally killed from 1984 to 1990 in the Chitwan area, although in 1987, three companies had been sent to guard Royal Chitwan National Park, and by 1988 there was a whole battalion; poaching pressure continues into the 1990s, despite this large security force within the Park.

Table 3: Number of known rhinos poached from 1973 outside Royal Chitwan National Park

Year	No.	Source	Year	No.	Source
1973	2	D.N.P.W.C	1984	4	D.N.P.W.C
1974	2	"	1985	2	"
1975	1	"	1986	0	"
1976	0	"	1987	0	"
1977	0	"	1988	0	"
1978	0	"	1989	0	"
1979	0	"	1990	1	"
1980	0	"	1991	1	"
1981	0	"	1992	1	"
1982	0	"	1993*	4	"
1983	0	"			

* January to November

Until 1990, the horns and nails from dead rhinos were taken to His Majesty the King's Palace in Kathmandu. These included horns from the occasional rhino shot by His Majesty the King's party from 1951 to 1990 on Royal hunting expeditions to the Chitwan area (Martin, 1985). Since then, with the election of the new democratic government, all rhino horns and nails and some skin, collected from rhino carcasses or taken from poachers, are kept locked up in Kasara in the centre of the Park, or in Tikauli if they are found outside the Park. On 1 January 1994 the storeroom at Kasara held 30 horns, while the one in Tikauli had 18 weighing 15 kg in total.

Recent rhino poaching in the Chitwan area

Unlike most other countries with rhino populations, Nepal's rhino numbers have been steadily increasing in recent years from around 100 in 1966 to 270-310 in 1978, reaching 358-376 in 1988, and according to the latest census carried out on elephant back from 2 March to 19 April 1994, a total of 440-460 rhinos was counted. The population has increased by an estimated 5.6% a year on average from 1966 to early 1994 (Leader-Williams, researcher, pers. comm.). These figures show that rhino poaching has been under control since the 1970s and continues to be negligible. Poachers have killed an average of only 4.7 rhinos per year from 1984 to November 1993 in and around the Park (see Tables 2 and 3). Most poachers are from the Tharu and Tamang tribes. Sometimes they are organised by a local leader, who will provide them with guns and ammunition. The size of a gang varies from two or three for shooting or snaring a rhino, to five or six for pit-digging, but gangs of more than ten are known. Most poaching pressure is in the grassland areas where rhinos occur in highest density, especially along the floodplain of the Rapti River, the Tamma Tal and on Bandarjhoola island. An estimated 23% of Royal Chitwan National Park is grassland as opposed to 70% sal (*Shorea robusta*) forest and 7% riverine forest (Yonzon, 1994).



The back of an elephant provides an excellent grandstand for observing rhinos. Elephants don't need roads and are taller than most grasses.

Several methods are used to kill rhinos. Pit-diggers make large rectangular pits at night on a rhino's path into which the animal may fall, but this can be a slow way of catching a rhino. In 1992 over 50 pits were known to be dug, but only 14 rhinos were caught in this manner in the Park. The poisoning of rhinos has been attempted several times through placing poison in maize and pumpkins near the Park in an area commonly visited by a rhino (Martin, 1992). After eating the poisoned food, the rhino takes up to five hours to die, and often the animal cannot be found by the poachers. Wire nooses and heavy spears suspended in trees are other techniques used to kill rhinos. These methods usually are not very effective as it may take three days or more to catch a rhino and in the meantime the army are likely to have found the traps. Rifles are by far the most effective weapons, and automatic ones have been commonly used since 1992. Occasionally, however, rhinos are wounded by a bullet and take several days to die. For example, in December 1993 one such rhino was found injured; for four days 20,000 visitors came to see the animal, many of whom annointed its skin with vermilion powder, burnt incense sticks and offered fruit for the animal's well-being. Some spectators cursed the poacher, while many prayed for the rhino's recovery. There were eight guards and 70 to 80 local volunteers who protected the wounded animal. When the rhino eventually died, the Forest Department staff cut off the horn, skin and hooves while the villagers took the rest of the carcass except the bones (Santosh Nepal, DFO Nawalparasi, pers.comm.).

When a poaching operation is successful the poachers take the animal's single horn and sometimes its hooves. In 1993 a gang was paid about 50,000 to 100,000 rupees (\$1,087 to \$2,174) for an average 700 gm horn (about \$1,553 to \$3,106 per kg), and 4,000 rupees (\$87) for the animal's 12 nails. In 1992 the first middleman in the chain (who bought from the poachers) sold the horn for 300,000 to 400,000 rupees (\$7,042 to \$9,390) per kg, but by late 1993 these middlemen were able to sell a horn for around 550,000 rupees (\$11,224) per kg (Tika Ram Adhikari, Assistant Warden, Royal Chitwan National Park, pers. comm.). The buyers are usually from Narayanghat, Pokhara and Kathmandu and they export the horn from Nepal usually by aeroplane to eastern Asia.

Fake rhino horns are occasionally put on the market. In 1993 five such horns made of buffalo and cow horn were intercepted in Chitwan and Nawalparasi districts, along with their maker who lived in Gorkha district. He had sold them to five people for 1,000 rupees (\$22) each; all the people involved were arrested as it is illegal to buy and sell fake rhino horns because of fraud (Adhikari, pers. comm.).

Rhino anti-poaching units in the Chitwan area

In recent years, the Department of National Parks and Wildlife Conservation, the Forest Department (including the Gaijda Gasti) and the army have all continued to be

involved in anti-poaching work in and around Royal Chitwan National Park, sometimes with financial assistance from NGOs.

In 1993 the National Parks Department consisted of 256 staff in the Park (including 150 workers for 50 domestic elephants), with a warden and three assistant wardens, 10 rangers, 12 senior game scouts and 60 game scouts. Morale is good: as well as a salary, the staff receive a uniform each year, free rations, housing and medical assistance. Park staff carry no guns, however, as anti-poaching patrols inside the Park are supposedly the job of the army only. In mid-1993, following the sudden 1992 poaching increase however, two anti-poaching units were created by the National Parks Department: one in the east of the Park and one in the west, including Bandarjhoola island. Each unit has six men: a senior game scout, two other department staff and three local villagers. The units are proving a success in collecting information on poachers, but they do not yet have any guns so the units cannot combat poachers actively.

The Forest Department has three District Forest Officers (DFOs) around the Park whose main job is tree protection outside the Park. Rhino anti-poaching work is considered only a minor duty. Nevertheless, the DFO in Chitwan district at Tikauli to the north of Royal Chitwan National Park has forest guards who are conscientious and patrol their area at night. There is also a DFO in Nawalparasi district, to the west of the Park, with 98 forest guards. These men carry 50 to 60 .303 rifles, and 15 of the guards patrol for rhinos. There are 25 resident rhinos within 60 km² of this district plus 10 to 15 migrants in the season. None was poached in 1991 or 1992, but two were killed in 1993. There is a third DFO in Makawanpur district, near Parsa Wildlife Reserve to the east of the Park, but there are seldom rhinos in the district so poaching pressure is not a problem there.

The Gaijda Gasti has worked under the DFOs around the Park for 20 years, continuing to patrol just outside the Park's borders in order to protect any straying



The outline of a rhino marks the entrance to the headquarters of Chitwan National Park at Kasara.

rhinos. They are knowledgeable about rhinos, with much experience. There were about 150 guards until December 1993 when the special unit was amalgamated with the Forest Guards. They are now called Armed Forest Guards and their primary work is to protect the trees outside the Park; rhinos have thus had to become a lesser concern. The 150 guards patrol on foot and have 70 to 80 .303 rifles and 10 pistols.

In charge of the army is a Lieutenant Colonel who has 800 men in one battalion. Due to leave and training time, there are about 550 men working on any one day; they are divided into five companies stationed at 30 posts inside the Park. Soldiers have a one-month training period and spend two years working in the Park before being transferred elsewhere in the country. Most of Nepal's parks and reserves are still guarded by the army, a heritage of His Majesty the King's former government. The soldiers are supposed to patrol day and night inside the Park to stop all forms of poaching. They carry .762 self-loading rifles. They are not involved in information-gathering in the villages as they operate only inside the Park, unlike the National Parks and Forest Departments who have informers in the villages and in the small towns along the highway.

The intelligence system in the Chitwan area

As well as good patrol work, one of the best deterrents to poaching is a good intelligence system. Until rhino poaching was stopped in the late 1970s, His Majesty the King gave rewards of up to \$400 for information leading to the arrest of poachers (Martin, 1985). When poaching restarted in 1984, an intelligence system was set up until 1988 when it was terminated because of government budget cut-backs, and due to the difficulty of accountability for cash funds spent on rewards for information (Adhikari, pers. comm.). The UK-based International Trust for Nature Conservation took over as the providers for informant money, as unlike the Department, the Trust could provide ready cash. Since January 1991, ITNC has given 2,000 rupees (about \$45) a month for informers. This small amount has been extremely effective in catching poachers. As a direct result of ITNC support, eight rhino poachers and eight tiger poachers were caught in 1991, three tiger poachers in 1992, and in 1993, with additional funds of at least 138,000 rupees (\$3,000), 37 rhino poachers and three tiger poachers were apprehended (Adhikari, pers. comm.) (see Table 4). Most of these were local villagers; they were all caught with evidence. In early 1994 these poachers were still in jail awaiting trial.

Table 4: Number of poachers arrested in and around Royal Chitwan National Park

Year	Rhino poachers	Tiger poachers	Total
1991	8	8	16
1992	0	3	3
1993	37	3	40

Source: Royal Chitwan National Park

When a poacher is caught, pressure is sometimes used to extract evidence. At other times, a member of the Department of National Parks and Wildlife Conservation may pose as a buyer to catch poachers and confiscate the horns, and often he works in conjunction with the two DFOs. Tika Ram Adhikari believes that giving rewards for information is the most cost-effective anti-poaching system, and that if he were given 200,000 rupees (worth \$4,348 in 1993) each year, he could catch almost all the poachers. In April 1993, punishment for rhino poachers was increased from five years in jail and/or a 15,000 rupee (\$326) fine to a maximum 15 years in jail and a 100,000 rupee (\$2,174) fine, a further deterrent to poachers.

Attitudes of the villagers around Royal Chitwan National Park towards rhinos

With an increasing human population around the Park, and increasing rhino numbers, negative feelings towards rhinos have risen; perhaps 75% of the local villagers now dislike the animals (Ganga Thapa, the King Mahendra Trust for Nature Conservation, pers comm.). This is because about 7% of the rhino population live outside the Park, disturbing the people and their livelihood. Old rhinos, especially, tend to wander out of the Park to eat rice as they cannot compete for grass inside; these old rhinos either die of natural causes or get speared. Generally, villagers chase the rhinos away rather than kill them, despite damage to crops being very severe in certain areas. For example, over 60% of the paddy lost to wild animals is caused by rhinos which often trample the paddy at night. Recent research has shown that wild animals, especially rhinos, boars and spotted deer, destroy 13.2% of the crops around Royal Chitwan National Park each year (Nepal & Weber, 1993). No compensation is paid. It is probable, however, that villagers equalise their losses by illegally entering the Park to obtain firewood, grasses, fodder, fish and medicinal or edible plants.

Rhinos are also dangerous to people. In 1993 one person was killed outside the Park, while five illegal grass cutters were injured inside the Park as well as one member of Park staff (Adhikari, pers. comm. and Ram Prit Yadav, Warden, pers. comm.). No fixed compensation is paid for death.

Villagers have other reasons for complaint. The soldiers sometimes treat them badly, beating those they catch for stealing thatch or wood instead of reporting them to the National Parks headquarters. Technically, villagers are fined 60 rupees for trespassing in the Park, and 20 rupees for each of their domestic animals found in the Park. Despite fines having been doubled since 1988/9, there has been no decrease in trespassing (Sharma, 1993). The army arrested about 11,000 people inside the Park (mainly women) from March to December 1993, and about 25,000 cattle were impounded (Lt. Col. S.R. Pradhan, Commanding Officer of the army battalion in Chitwan, pers. comm.); these figures are probably the highest in Asia for any protected area with rhinos. The villagers dislike the sometimes arrogant soldiers and they feel deprived by them of their former rights to Royal Chitwan National Park. Lack of firewood and fodder are the villagers' main grievances over the Park.

It is very important to have the full co-operation and support of the villagers. Park officials realise the importance of benefits to the locals, and some valuable measures exist. Since 1976, grass and reed cutting has been permitted for a certain period each year. In recent years, for 15 days every January, villagers pay five rupees each for a permit to enter the Park as often as they wish, in order to collect thatch grass, reeds and binding materials, mainly for house construction; this is a significant benefit to the villagers, worth \$500,000 a year (Sharma & Shaw, 1993a). In 1993, 65,254 permits were issued.

Another practical benefit for the local villagers is that when a rhino is found dead - after officials have removed the horn, hooves and skin - the villagers are permitted to help themselves to blood (which is thought to regulate menstruation), urine (which is consumed to alleviate respiratory disorders) and meat (which is eaten either dried or as a stew to give extra energy). The blood and urine are particularly popular in Nepal.

Some villagers, in addition, benefit from work in tourist lodges and camps which employ over 650 people during the tourist season from October to May (although many jobs are also given to outsiders as the local tribal Tharus are not as well trained to deal with foreign tourists). The tourist industry has expanded greatly from 836 foreign visitors to Royal Chitwan National Park in 1974 to 55,335 in 1992 (see Table 5). There are at least 46 lodges and hotels around the Park with six more under construction, and there are seven establishments inside the Park. Over 80% of the visitors are foreigners who pay 650 rupees (\$14) to enter the Park and another 650 rupees per hour for a ride on a National Parks elephant. Foreign tourism is the second largest earner of foreign exchange in Nepal and significantly helps the local villagers in employment.

Table 5: Number of foreign tourists to Royal Chitwan National Park

Year	Number	Year	Number
1974	836	1984	14,166
1975	2,206	1985	14,156
1976	5,021	1986	25,156
1977	5,547	1987	33,225
1978	8,325	1988	34,606
1979	6,290	1989	36,275
1980	8,116	1990	36,072
1981	8,464	1991	43,750
1982	11,570	1992	55,335*
1983	11,763		

*This includes not more than 10,000 Nepalese visitors a year, but no exact figures are available.

N.B. Tourist fees (late 1993): Entry fee for foreigners 650 rupees for 2 days. Entry fee for Nepalese 10 rupees for 2 days. Elephant ride per person 650 rupees per hour.

Source: Royal Chitwan National Park

Tourism may become an even more important benefit to the local villagers, as an Act was passed in 1993 stating that 30% to 50% of Chitwan's revenue would go to the local community, rather than the Central Treasury, for development projects and in order to create an impact zone around the Park. The impact zone would be managed by villagers and Park staff. Trees would be planted in the zone, enabling the villagers to collect legal firewood; the impact zone would also create a buffer for the rhinos and other wildlife while allowing cattle grazing, thus lowering pressure on the Park's resources and reducing the problem of the villagers' lack of firewood and fodder (U.R. Sharma, Director General, Department of National Parks and Wildlife Conservation, pers. comm.).

Royal Chitwan National Park's budget

In 1993/4 the total government budget of Royal Chitwan National Park, which included maintaining an elephant breeding centre and 50 domestic elephants for patrolling and tourism, was 38,613,940 rupees (\$804,457) of which the army received 65%. The total budget for the Park for the same financial year, which included the government's contribution and assistance from non-government sources of at least another \$3,375, amounted to \$867 per km², a very large sum, especially for such a poor country. The Park's revenue, mainly from tourism, but also from penalties and grass and reed cutting, was 39,600,000 rupees (\$893,905) in 1992/3 or \$959 for each km² of the Park. For the last few years, the Park's earnings have been very similar to its expenditure, which is very unusual in Asia. Royal Chitwan National Park probably produces more income per km² than any other Park in Asia with a rhino population.

Reasons for 1992's sudden increase in rhino poaching in and around Royal Chitwan National Park

Since 1973, most rhino deaths in the Chitwan valley have been due to natural causes (see Table 6). In 1992, however, more rhinos were killed illegally than in any other year since the late 1960s - at least 18 (see Table 7) - exceeding deaths by natural causes for that year. From August 1992 to January 1993, 14 were killed in pits, two were snared with cables, one was shot and one was speared. A minimum of four were killed in the Park in 1993 (see Table 8) and four more outside the Park. Although not biologically significant, this rise in poaching has caused concern.

Table 6: Number of rhinos killed by tigers and number that died of natural causes from 1973 to 1990 in and around Royal Chitwan National Park

Year	Inside Park		Outside Park	
	Killed by tigers	Natural deaths	Killed by tigers	Natural deaths
1973*	2	4	0	4
1974	1	7	0	4
1975	0	2	1	5
1976	0	1	1	1
1977	0	5	0	2
1978	0	7	0	4
1979	0	6	0	2
1980	0	8	1	2
1981	0	3	0	8
1982	0	7	0	6
1983	1	2	0	3
1984	0	2	0	8
1985	0	2	0	4
1986	0	2	0	4
1987	1	5	0	4
1988	1	0	0	2
1989	2	6	0	1
1990	0	3	0	5

*Park started in January 1973

Source: Royal Chitwan National Park, and Ministry of Forest and Soil Conservation

Table 7: Number of rhinos poached and methods used in and around Royal Chitwan National Park in 1992

Area	Type of poaching	Number of rhinos
Inside Park near Machan Wildlife Resort	pit trap	2
Inside Park near Gaida Wildlife Camp	pit trap	4
Inside Park on Bandarjhoola island	pit trap snares	6 2
Inside Park near Temple Tiger	rifle/shotgun	1
Inside Park near Chitwan Jungle Lodge	pit trap	2
Outside Park near Chitwan Jungle Lodge	pit trap	1
Total		18

Source: Royal Chitwan National Park

Table 8: Number of rhinos poached and methods used in and around Royal Chitwan National Park in 1993

Area inside Park	Poaching type	No. of rhinos
Bandarjhoola island	Chain noose	1
Near Temple Tiger	Bullets	2
Near Materi	Bullets	1
Total		4

N.B. These are minimum numbers; if rhinos die deep in the forest and cannot be found, their bodies decompose.

Source: Royal Chitwan National Park

Rhino poaching increased in 1992 for various reasons. Firstly, the prices in rupees for rhino horn rose in Nepal. Some tiger poachers thus switched to killing the more lucrative rhinos, which may also help to explain the fact that there was a decline in tiger poaching during that time (C. McDougal, tiger researcher, pers. comm.).

Secondly, with the new democratic government, it became harder to convict a poacher. The National Parks Department presently has a list of 80 identified poachers, all Nepalese, who cannot be convicted due to lack of evidence.

Thirdly, the new democracy has also led to conflicts amongst some government staff. It is now sometimes more difficult to discipline officials, and inefficiency has consequently increased. It is harder also to get rid of ineffective members of staff. A further problem has been that four different Director Generals of National Parks have been in office from 1991 to the end of 1993, which disrupts policies and continuity. In addition, government policy has been to reduce most departments' staff, and National Parks' mid-level staff were cut by 30% in the headquarters and 25% in the field in 1993.



Horn, nails, and hide that were collected from deceased rhinos or confiscated from poachers had to be sent to the King's palace in Kathmandu until 1990. Shown here is Chitwan National Park staff carefully wrapping up some before transporting them to the palace.

The fourth and main reason for the increase in rhino poaching, however, was poor leadership in Royal Chitwan National Park at the time. So much

depends on a good leader, and the main cause of rhino poaching decreasing or increasing unexpectedly in certain years is usually due to the competence or incompetence of those in charge. Before 1990, the Palace could directly order the army and other sectors of government to patrol more rigorously if leadership slackened. Now, the forest guards are fully controlled by the DFO, the Parks Department by the Park Warden, and the battalion's effectiveness depends on the commitment and strength of the Lieutenant Colonel. If these leaders are weak, ineffective or lazy, the system suffers.

The army is not obliged to patrol extensively, and this duty became even less effective than usual in the early 1990s. The army's patrol work has limitations anyway due to the regular times the men must be in camp. The presence of guard posts inside the Park is a better poaching deterrent than the limited patrolling. The worst poaching in 1992/3 was on the western side of the Park, including Bandarjhoala island where there were insufficient numbers of army posts.

Another problem is that conflict can occur between the commanding officers and the park wardens, and if the army's co-operation is lost, poaching pressure increases. This is unacceptable when one considers that 65% of the Park's budget goes to the army for Park protection.

Furthermore, soldiers generally dislike working at Royal Chitwan National Park as they fear the rhinos; their training for rhino patrol work is inadequate and two years in the Park are not long enough to gain the needed experience. If the two-year posting is lengthened, as occurred in 1992 when the same soldiers were in the Park for two and a half years, efficiency levels drop as the men so much want to leave. The soldiers consider Royal Chitwan National Park to be a hardship post.

It is interesting to note that in the bad year of 1992 there was one area with no rhino poaching: that of Nawalparasi district (see Table 9). This was directly the result of good patrolling which in turn was due to a hard-working District Forest Officer who motivated his men (Adhikari, pers. comm.).

Table 9: Minimum number of rhinos poached in and around Royal Chitwan National Park

Year	Area within Park	Chitwan district	Nawalparasi district
1990	3	1	0
1991	1	1	0
1992	17	1	0
1993	4	2	2

Source: Royal Chitwan National Park, and Ministry of Forest and Soil Conservation

Recommendations for improving rhino conservation in and around Royal Chitwan National Park

- * A special Parks unit inside the Park and a special Forest unit outside the Park should be established to deal specifically with rhino protection.
- * The new anti-poaching units of the Department of National Parks and Wildlife Conservation, although good at collecting information on poachers, need guns, walkie-talkies and camping equipment if their tasks are to include effective patrol work.
- * The number of game scouts inside the Park should be increased from 60 to 100.
- * More army posts should be set up in the western side of the Park, including the river areas and Bandarjhoola island where there has recently been an increase in poaching.
- * More walkie-talkies and transport should be supplied to the army posts.
- * Leadership effectiveness, in all anti-poaching sectors, should be regularly checked, and incompetent leaders replaced immediately.

- * The frequent changing of the Director General of Parks needs to be stopped.
- * There should be a significant increase in funding for the intelligence system operated by the Park Warden and the DFOs.
- * Publicity in the local newspapers is needed, stating the truth that the price of rhino horn has fallen in the Far East, in order to deter poaching.
- * Conditions for the villagers need to be improved by implementing the plan for an impact zone around the Park. Villagers also need to be encouraged to plant more trees, make gas from cow dung, improve the uses of agricultural waste from rice straw and promote the use of stall feeding so the number of domestic animals illegally entering the Park would be reduced (Sharma, 1989; Sharma & Shaw, 1993b).

Royal Bardia National Park

The history of Royal Bardia National Park's rhinos

Royal Bardia National Park is a large area of lowland, similar in size and habitat to Royal Chitwan National Park, in the more remote, south-west part of Nepal. In order to start a new rhino population in Nepal, rhino were translocated there from the Chitwan area: 13 in 1986 and 25 in 1991. The first group of rhinos was taken to the west side of the Park to the Karnali flood plain. Of these first 13 rhinos, three crossed the border into India and one was illegally killed. The second group of rhinos was released in the more remote and rugged eastern section of the Park in the Babai valley. Four of these rhinos were poached in 1992/3. From 1986 to early 1994, however, at least 17 calves were born. Of the Park's total rhino population, by early 1994 eight had been poached, four had died of natural causes, three of unknown causes and one was killed by a tiger (see Table 10). Thus Royal Bardia National Park had 39 rhinos (both adults and calves) in 1994 (R.K. Thapa, Ranger, pers. comm.).

Rhino poaching in and around Royal Bardia National Park

Poaching is organised by people living mostly to the north of the Park. A gang with a rifle or shotgun consists of two or three local people, but gangs of five or six are common in the remote eastern side of the Park where the poachers are less likely to be spotted. It is in this region that pits are often dug, usually near a rhino track leading to a water hole; many pits are dug at one time. The third method of poaching used in the Park is snaring. A fairly thick electric wire is tied to a tree over a rhino track, and branches are put down to block other paths, so a rhino is forced to follow the route with the snare (Ram Prit Yadav, former Warden of Royal Bardia National Park, pers. comm.).

The Park lost its first rhino to poachers by gunshot in 1988/9 in the north-west part (near Khairbhatti). Two more were illegally shot dead in 1991/2 outside the Park, one west of the Karnali river and the other to the south. In 1992/3 poachers moved to the eastern side of the Park to the newly introduced rhino population in Babai valley; two were killed in wire snares, and two poached by unknown means. In 1993, one more rhino was shot dead in the south of the Park (R.K. Thapa, pers. comm.).

Table 10: Known deaths of rhinos in Royal Bardia National Park

Year	Natural death	Poaching	Tiger predation	Unknown causes	Total
1986/7	1	0	0	0	1
1987/8	0	0	0	0	0
1988/9	0	1	0	0	1
1989/90	0	0	0	0	0
1990/1	0	0	0	0	0
1991/2	1	2	1	2*	6
1992/3	1	4	0	0	5
1993/4	1	1	0	1*	3**

Source: Royal Bardia National Park

*babies **early January

Prices paid to poachers and middlemen for rhino horn are not known because information-gathering has been inadequate. But in November 1993 six poachers were caught south of the Park near Gulariyai. They admitted to having killed the rhino in 1993 and selling the horn to a person from Pokhara. Horns are bought probably by businessmen in Pokhara and Nepalganj who may sell them to merchants in Kathmandu who arrange their illegal export.

Anti-poaching efforts for Royal Bardia National Park

Royal Bardia National Park has never had a Gaida Gasti or special rhino patrol unit; forest guards patrol outside the Park and the army work inside with some help from the Parks Department. There are two army companies of 250 men each, one in the west and one in the east, but only 175 men are available in each company at any one time. In 1992, unlike in Royal Chitwan National Park, the army did patrol Royal Bardia National Park effectively, due to good leadership. However, poaching worsened at that time in the Babai valley, due to lack of staff in the area. Since then, more army personnel have been posted to the valley and poaching has been reduced. Each company has a Major in charge. Patrolling occurs usually three times a day and occasionally at night.

Patrol times differ so that the poachers do not know when a patrol is out. Soldiers in the Park think that it is a duty to patrol, unlike those in Royal Chitwan National Park. The Royal Bardia National Parks Department, which has 128 employees, maintains one anti-poaching unit of nine men (five Parks staff and four local men), but they have no firearms. In early 1994, this unit patrolled the western area where there were 13 rhinos. There are also 60 game scouts who patrol with nine domestic elephants, but neither do they have firearms.

The effect of Royal Bardia National Park on the nearby villagers

Rhino damage is not so severe around the Park compared to Royal Chitwan National Park as there are far less rhinos (39 versus 450); there are also fewer people in this region; furthermore, part of the northern Park boundary is a forest reserve. Some rhinos in the east, however, do eat crops on the Park border, for which no compensation is paid. The re-introduced rhinos had acquired the habit of crop-raiding around Royal Bardia National Park; they like rice and maize especially. Rhinos also wander out of the Park into the village areas in the west. A report submitted to NORAD in 1993 stated "Preliminary results show that rhinos in the Karnali floodplain (in the west) are causing serious damage to agricultural crops in certain key locations and that harassment and injuries to humans are increasing" (NORAD, 1993). From 1989 to 1992 four villagers were injured, while in 1993 two people were killed by rhinos, one inside and the other outside the Park (Yadav, pers. comm.). There is still no fixed compensation for death.

In order to maintain good relations with the villagers, especially important now with the presence of rhinos, the Parks Department allows the people to receive certain benefits from the Park. There is presently little demand in this area for rhino urine, blood or meat, although the local people do use the skin for religious purposes. Villagers are allowed to cut grass and reeds for 15 days in the winter, and 45,193 permits were issued for 12 rupees each in the 1993/4 season. The Park's tourist industry is presently small, so very little employment is possible. The one tented camp (with 26 beds) inside the Park, and a lodge (with 24 beds) plus two small rest houses outside the Park employed just 54 people in late 1993. Only about 600 foreign visitors came in that year, but this was an increase from 222 in 1988 (see Table 11).

Table 11: Number of foreign tourists to Royal Bardia National Park

Year	No.	Year	No.
1984/5	212	1989/90	556
1985/6	20	1990/1	360
1986/7	115	1991/2	670
1987/8	222	1992/3	602
1988/9	314		

Source: Royal Bardia National Park

It is hoped that a significant tourist industry will soon be established in the region as the highway to Royal Bardia National Park has now been tarmac'd the whole way from Kathmandu. In the future more money from tourism is due to go to the local people; there is new legislation, as for the Chitwan area, allowing 30% to 50% of the tourist revenue to go into local community development projects and for an impact zone around Royal Bardia National Park. Meanwhile, certain international NGOs are supporting community services, research and monitoring of the rhinos, while also helping to equip the anti-poaching personnel with camping gear and walkie-talkies.

Royal Bardia National Park's budget

In 1992/3 the Park's budget was 19,524,488 rupees (\$440,733) of which the army received 72%. This budget works out at \$455 per km², significantly less than Royal Chitwan National Park's. The earnings of Royal Bardia National Park are also far less. The majority of the income comes from the sale of trees. In 1993, the Park earned just 1,233,249 rupees (\$26,810) from all sources. The Park also has less government staff than Royal Chitwan National Park; including the full establishment of the army, the Park has a staff of 0.65 per km² compared with 1.1 for Royal Chitwan National Park.

Recommendations for Royal Bardia National Park

- * The budget and the number of staff for the Park should be increased, as by January 1994 eight rhinos had been poached and the net increase in rhino numbers from the 38 founder animals was only one in early 1994.
- * The Park's anti-poaching unit needs to be increased in size and should be given rifles.
- * The intelligence system in the area must be improved significantly, to at least the standards of that in the Chitwan area.

- * More fencing around the Park is needed to keep out cattle (although this is not practical for Royal Chitwan National Park due to greater floods and human pressure).
- * Relations with the villagers must be improved with local development projects.
- * Communication with India should be improved so that any rhinos that cross the border can be recovered.

Conclusions

Since the establishment of Royal Chitwan and Royal Bardia National Park, His Majesty's Government of Nepal has provided a large annual budget to protect the growing rhino population, despite being one of the poorest countries in the world. It has also allocated a large security force, namely the army, to the parks. Royal Chitwan National Park has always had strong support, first under His Majesty's Government and now with the new democratic government; and the Nepalese have managed the rhinos almost entirely by themselves with very little foreign expertise or external funding assistance. The number of rhinos has more than quadrupled since the late 1960s, a testimony to Nepal's great conservation success, enabling a second population to be established in Royal Bardia National Park.



Shown here are three of the most valuable parts of a rhino: hide, nails and horn. Other parts of the rhino's anatomy are also useful in traditional medicine when obtained fresh.

His Majesty's new government is also very aware of the importance of providing benefits to the local villagers around the two parks, such as by allowing tens of thousands of people to enter the parks for valuable grass and reed collection each year, and by permitting them to take certain rhino products from the dead animals. Furthermore, foreign tourism is highly encouraged in Nepal's parks and brings the local villagers much needed employment benefits.

These management strategies have been the right ones. As long as good leadership is maintained within the parks so that patrol work is carried out effectively, and as long as funding for intelligence gathering can be secured (by far the most cost-effective method of stopping poaching), Nepal's rhinos should continue to increase to the parks'

carrying capacity. The rise in poaching in 1992 should remain an exceptional case, as lessons from this experience have probably already been learned. Thus, with effective management and leadership, Nepal will maintain its reputation as one of the world's greatest conservation success stories for the rhinoceros.

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