7 Numbers of greater one-horned rhinos continue to rise

(*Oryx*, July 1996)
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Greater one-horned rhinoceros *Rhinoceros unicornis* populations are still expanding. The newest estimate, given at the December 1995 IUCN Asian Rhino Specialist Group meeting, was 2135. Nepal's rhinos now exceed 500 and India has about 1600.

Over the last few years, demand for the horn in eastern Asia has been falling. Its export price from the Indian subcontinent has stayed at $US9000/kg since 1992, although the quantity of horns on the market has been reduced. Poaching in India in 1994 and up to November 1995 decreased by about half (to 31 and 35 rhinos, respectively) as compared with the previous 2 years, while in Nepal no rhinos were known to be poached at all in 1994 in or around Royal Chitwan and Bardia National Parks, and, according to officials, only one was poached in 1995, north of Chitwan.

The reason for such success against the poachers is that India and Nepal independently stepped up their security measures in 1994 and 1995. In India's Kaziranga National Park (home to about 1300 rhinos), the budget was slightly increased, to $US667,364 in 1994/95, or $US1550 per sq km, one of the highest figures per unit area in Asia. The informant system was also improved around Kaziranga; there has been a tenfold increase in reward money over the last 4 years, to over $US2110 spent in 1994, and 46 arrests were made in that year. Of significant importance was the prevention by the Director of Kaziranga National Park of the transfer of three excellent range officers, who are the key people in the field, motivating the 435 forest staff and regularly visiting the 115 guard camps. There is one man per sq km in Kaziranga, one of the highest concentrations of patrolling effort in the world, and with good leadership there has been improved vigilance and more patrols. As a result, 12 rhino poachers met their deaths in 1994, the most for many years, which has made poachers more reluctant to enter the park. There have also been fewer poaching incidents because more camps for forest guards were placed on Kaziranga's southern boundary, which is close to about 100 small villages. In order to help with patrol work, the Rhino Foundation for Nature in North East India gave boots to all the field staff and many jackets. 'Our guards are living in

wretched conditions with hazardous duties' stated the park's director. This small amount of assistance has raised their morale and effectiveness. Not only has the welfare of the staff been slightly improved, but also that of the people surrounding Kaziranga, although officials admit that much more is needed. If local villagers are adequately helped by park officials, it is less likely that they will aid poachers.

A further factor in the reduction of poaching has been better co-operation between the police and the range officers because the police have been less occupied in dealing with terrorists in Assam. Recently, several arrests were made of rhino horn traders in Calcutta, Siliguri and Dudhwa; in the past such arrests were very rare. However, as Anne Wright of the Rhino Foundation states, 'India must be one of the few countries in the world which lets rhino poachers out so easily on bail', and this must be rectified through better enforcement of India's Wildlife Act.

Rhino poaching in Nepal has been reduced recently for similar reasons. The police have become more active. About 40 rhino poachers were in jail in 1995 (including 14 arrested in 1994), and unlike in India, the sentences are commonly upheld. Furthermore, sentences were increased to a maximum of 15 years in jail and a Rs100,000 ($US2000) fine in 1993. Of great importance to the safety of rhinos is the integrity of the District Forest Officers (DFOs), especially around Royal Chitwan National Park, because the animals are sometimes poached when they wander into neighbouring farmland. The DFOs were very active in catching poachers and traders in 1994 and 1995. Non-governmental organizations have been increasing their efforts in Nepal also. The World Wide Fund for Nature (WWF) is helping to fund two new anti–poaching units inside Chitwan and one more outside the park. Each unit consists of six armed men. There is now a similar unit in Royal Bardia National Park, also funded by WWF. The army has increased its day and night patrols inside Chitwan and Bardia as well, acting as an effective deterrent against poachers.

As in India, most poachers are caught through informers, and intelligence gathering has been improved recently in Nepal. The International Trust for Nature Conservation is now paying people on a regular basis to collect information, as well as giving reward money. These payments have increased five-fold since 1991, to $US6827 in 1994. This money has been raised from individual donors and through a collection box at Tiger Tops Jungle Lodge in Chitwan.

Officials have also been allocated access to a higher budget to improve park management, as in India. In 1995/96 the total budget of Chitwan was about $US900,000 (or $US966 per sq km). More financial aid must be given to the neighbouring villagers, however, because rhinos damage crops and even kill people. There are a few eco-development

projects under way and more are planned to improve relations. For example, buffer zones have been proposed around Chitwan and Bardia, with 30-50 per cent of the revenue earned by the two parks being spent on these zones for local people. When this is approved by the government, the killing of rhinos may be reduced even further.

One must not become complacent in view of these increasing successes against poachers in India and Nepal. One corrupt or inexperienced senior official can have dire consequences, as can a breakdown in law and order. In Assam, as least nine rhinos were killed in Orang Wildlife Sanctuary in 1995, due to mismanagement and lack of adequate patrols, following the theft of the main radio set and arms by terrorists. In Manas National Park there are perhaps only 20 out of 90 rhinos left, due to political disturbances in the area over the last 7 years. Both Orang and Manas now urgently require equipment to strengthen antipoaching efforts.

The question is, has wildlife in India the same level of political support from the Prime Minister as it had in the days of Nehru and Indira Gandhi, to enable the government to allocate sufficient funds and manpower to safe-guard India's rhinos now and in the future? According to S. Deb Roy, formerly Chief Conservator of Forests (Wildlife) Assam and Inspector General of Forests (Wildlife) Government of India, 'The rhinos will be gone in 25 years if there is not the political will to save them'. The same fear exists in the long term in Nepal now that the King, a supporter of rhinos, no longer has so much power with the advent of multiparty democracy.

Rhinos can be saved if adequate funds are provided for their protection and if there is effective leadership in the field. The situation in both India and Nepal has improved and will continue to do so in the future as long as there is significant support from senior politicians and bureaucrats.

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8 The importance of park budgets, intelligence networks and competent management for successful conservation of the greater one-horned rhinoceros

(*Pachyderm*, July-December 1996)

EBM

Introduction

Since the late 1960s the greater one-horned rhinos in India and Nepal have been increasing steadily in numbers largely due to high park budgets and good management. Poaching increased in both countries, however, in the early 1990s. Subsequently, more funding for intelligence networks around some of the national parks and improved park management reduced poaching significantly in 1994 and 1995. This paper will examine methods used in India and Nepal to reduce the recent spates of poaching. It will also point out why some rhino areas in India are still insecure.

India

The north-east state of Assam is home to 1,500 rhinos, 95% of India's total rhino population. Poaching was serious in 1992 and 1993 in Assam. This was due to a number of factors including political instability (especially around Manas and Kaziranga National Parks), inadequate intelligence funds, a cut back in funds for management in several protected areas, poor leadership in certain parks and wildlife sanctuaries, low morale of forest guards, and no arrests of rhino horn traders (Vigne & Martin, 1994). In Assam, 70 rhinos were poached in 1993, but in 1994 the situation turned around when only 31 rhinos were poached (see Table 1), while 35 were poached in 1995 (up until 1 November). The small rhino populations in West Bengal and Uttar Pradesh

Both park staff and Army personnel round up cattle found in Chitwan National Park and charge their owner a fine for bringing the animals inside.

have also been secure recently. India's rhino conservation success is due to several reasons combined, including the arrest of some major traders. Until 1995 few such arrests had ever been made by the Indian authorities. Certain non-government organisations (NGOs), notably TRAFFIC India and the Wildlife Protection Society of India, have helped the government by providing information on the trading syndicates, largely through the help of informers. In June 1995, police officers caught five people in the town of Siliguri in West Bengal who offered to sell 60 rhino horns and were in possession of two. These two horns probably originated from Assam and would have been sent to Bhutan for export to eastern Asia. The leader of the smuggling syndicate was of Taiwanese origin who had trading connections in India, Bhutan, Nepal and Taiwan. This trader claimed to have supplied the 22 rhino horns which a Bhutanese princess carried from Bhutan to Taiwan in September 1993 (Anonymous, 1995). In August 1995 another businessman was caught in Calcutta with rhino horn, elephant ivory and tiger skins. Until the Siliguri Bhutanese connection became important, Calcutta was the main entrepot for rhino horn from India. Since the late 1980s, however, the Indian authorities have intensified their efforts in this area so the Calcutta trade route is less significant. In October 1995 another horn was seized in Siliguri. This small town has become India's main entrepot for rhino horns, being near Assam, Nepal and Bhutan and being a junction for most transport

routes in the region. Siliguri thus attracts many businessmen including those dealing in endangered wildlife products. It has been a major breakthrough that two big rhino horn traders in this town have been caught.

Table 1: Number of known rhinos poached in Assam

Year	Kaziranga NP	Manas NP	Orang WS	Pabitora WS	Other areas	Total
1992	49	11	2	3	2	67
1993	40	22	1	4	3	70
1994	14	4	7	4	2	31
1995*	21	1	9	2	2	35

** up to November*

Source: Forest Department of Assam

Assam's Kaziranga National Park

Kaziranga holds 1,300 rhinos, nearly 90% of Assam's rhino population. The recent drop in rhino poaching in India thus relates closely to improved rhino conservation in and around Kaziranga.

First, money spent on information about poachers and middlemen around Kaziranga increased ten times from 1990/1 to 1993/4: from $199 to $2,108 (see Table 2). In 1994 12 rhino poachers were killed and 46 arrested compared with four killed in 1991 and only 25 arrested. However, the District Forest Officer at the Park headquarters in Bokakhat said he needed 200,000 rupees a year ($6,000 in late 1995) to pay for even more informers. In 1995 10-15 people were on the books as informers, and with more informers poaching would be reduced even further.

Table 2: Amount of money spent by the Forest Department of Assam in and around Kaziranga National Park for intelligence gathering operations

Year	US $	Year	US $
1990/1	199	1993/4	2,108
1991/2	279	1994/5	1,224
1992/3	881		

Source: Forest Department of Assam

Second, the police around Kaziranga have become more involved in stopping the rhino horn trade. With the Park staff's new knowledge on poachers and traders, they have had greater co-operation with the police. The police have been also less preoccupied with terrorists recently. It is only the police who have the authority to organise arrests in the villages, and in 1994 and 1995 the police and Forest Department staff carried out at

A rhino cow with her calf is looking for the fresh, new grass after burning has taken place.

least nine joint raids which resulted in the deaths of four poachers and the arrests of 20 men, while six firearms used to kill rhinos were confiscated (Assam Forest Department, 1995). Third, Park management has improved. The Director of Kaziranga National Park has made efforts to ensure that he has the most competent and experienced three range officers who have motivated their men and improved patrol work. These range officers have been responsible for overseeing a number of encounters with poachers from 1993 up to November 1995 resulting in 116 arrested and 24 killed (see Table 3). The range officers supervise the 204 forest guards, 60 boatmen, 62 foresters, 56 game watchers and other men inside Kaziranga. There are 435 full-time staff involved in anti-poaching work based at 113 camps in the Park, which works out at over one man per km^2, a very high concentration of manpower, and an excellent poaching deterrent, when managed correctly. The Forest staff put a lot of effort into their work, risking their lives in trying to catch poachers in the difficult terrain and often swampy conditions of Kaziranga. This is a great feat considering that the men are not trained in guerilla warfare. Because of this, poachers can still sneak inside the Park, shoot a rhino, and come out without being caught. In 1993 poachers often shot rhinos on moonlit nights, so patrol work was intensified at night. As a result, poachers in 1994 reverted to day-time shooting, which fortunately is easier to detect (Pankaj Sharma, Range Officer, Baguri, pers. comm., 1995). Some of the forest guards were re-positioned in camps along the

Park's heavily human-populated southern boundary, and more patrol boats were put onto the Brahmaputra river on the northern boundary. In late1995, however, six of the 12 boats with engines were broken as were 27 of the 110 small country boats (C.R. Bhobora, DFO, Kaziranga National Park, pers. comm., 1995).

According to S.K. Sen, Director of Kaziranga National Park, rhino poaching in 1995 has been occurring in the central part of the Park by gangs still entering either from the north side across the Brahmaputra river or from the vulnerable southern boundary. In 1995 (up to 1 November) six rhinos were caught by poachers in hand-dug pits and 15 were shot, mainly by gangs organised by traders from Nagaland, a neighbouring state (see Table 4). In 1995 gangs of four to six people earned about the same as the previous few years for a horn, working out at $885 to $2,556 per kilo of horn, a sizeable sum for a gang of poverty-stricken villagers. Nevertheless, it is an encouraging sign that the price of rhino horn has not gone up recently, although fewer new rhino horns are now on the market.

Table 3: Encounters and raids in Kaziranga National Park, Assam

Year	Poachers killed	Poachers arrested	Arms recovered	Ammunition recovered	Horns recovered
1993	8	67	19	49	4
1994	12	46	9	60	1
1995*	4	3	1	22	2

**up to November*

Source: Forest Department of Assam

Table 4: Rhino mortality in Kaziranga National Park, Assam

Year	Poaching methods			Poached	Death from natural causes	Total
	pit	gun	electrocution			
1992	2	45	2	49	66	115
1993	2	38	0	40	58	98
1994	3	11	0	14	37	51
1995*	6	15	0	21	47	68

**up to November*

Source: Forest Department of Assam

Fourth, there has been increasing NGO support. The Rhino Foundation for Nature in north-east India gave equipment to Kaziranga's field staff, the first NGO to do so for many years. The Rhino Foundation, which was established in 1994 and is supported by

several tea companies in Assam and West Bengal, donated, in 1994 and 1995, 450 pairs of hunting boots, 250 raincoats and 50 water filters to the staff. The Foundation has also been helping the farmers around Kaziranga by inoculating their domestic animals in 1994 and 1995. In addition, the Tiger Link rewarded three range officers, one informer and one home guard in and around Kaziranga the equivalent of $312 each in 1995. These NGO contributions have raised the morale of the Park staff, improving their patrol work, and have helped to reduce hostility from local farmers towards the Park.

Fifth, the Assam government budget of Kaziranga (a park of 430 km^2) increased slightly in 1994/5 compared with the year before (after taking into consideration an 8% inflation rate) to $1,552 per km^2. This is one of the highest figures per unit area in Asia (see Table 5). This budget provides substantial benefits to the running of the Park, including salaries for a large anti-poaching staff. Nevertheless, more funds are needed if the Park is to be properly maintained and developed in future years.

Table 5: Government budgets for rhino protected areas in Assam

Year	Kaziranga NP	Manas NP	Orang WS	Pabitora WS
1992/3	$ 529,546	$441,476	$136,818	$232,669
1993/4	582,930	503,124	131,559	234,954
1994/5	667,374	515,119	152,521	232,678

Source: Forest Department of Assam

Assam's Manas National Park

Unlike in Kaziranga, rhino poaching has remained a serious problem in Manas National Park. From 1990 to 1995 Manas lost most of its rhinos (see Table 1). The main reasons are due to serious political disturbances in the area, a lack of adequate funding and manpower, and security problems.

First, continuing since the late 1980s there has been a breakdown in law and order, until very recently, due to the political disputes. As a result, many rhinos were poached. For example, in March 1993 one gang leader from the Bodo tribe organised the killing of at least 13 rhinos. The man lived only a few kilometres from the area headquarters of Bansbari in the village of Khabsinpara (Ajoy Brahama, Range Officer, Bansbari range, pers. comm., 1995). From 1990 to the end of 1993, perhaps just over half of the estimated 90 rhinos had been killed. In 1994 at least four more were killed in the central Bansbari range. Bhuyanpara (the eastern range) and Panbari (the western range) were rarely patrolled from 1989 onwards due to the fear of Bodo terrorists hiding in the forest. It is likely that virtually all the rhinos in these two areas had been eliminated by 1994. There is information on only one poaching gang operating in 1994 in Manas. This gang of four from Nalbari District, all armed with rifles, shot a rhino and cut off its horn

which weighed about 625 grammes. It was bought by a man from Guwahati, Assam's capital, for the equivalent of $2,555 a kilo (Brahama, pers. comm., 1995). In 1995 up to early November, another rhino was known to have been shot in the Bansbari range.

Since it has not been possible to carry out a census nor even to patrol large parts of Manas due to the political upheavals, the number of surviving rhinos is a guess. Two females with calves were seen in the Bansbari range in 1995 and its range officer believes that perhaps 20 remain in the entire Park (Brahama, pers. comm., 1995).

Manas Park has been facing additional problems since 1989 due to the political problems in the area. In 1994 and 1995 seven wild elephants were killed for their tusks (Brahama, pers. comm., 1995), and in 1995 two domesticated elephants had their tusks removed while their mahouts were held at gunpoint (Rajendra Agarawalla, Field Director, Manas Tiger Project, pers. comm., 1995). Furthermore, a considerable number of trees has been cut down for timber, while rhino horns and firearms have been stolen from the Forest Department, and six Forest staff have been murdered (Deb Roy, 1994).

Second, throughout this difficult time, Manas staff did not receive adequate funds nor equipment to maintain a strong presence, and many camps were evacuated as areas were unsafe. By November 1995 only 20 of the 43 forest guard camps were occupied and the morale of the remaining field staff was low with little incentive to patrol (Deb Roy, 1994; Menon, 1995). Funding for Manas has still not been sufficient for its rehabilitation. The government budget, when corrected for inflation, dropped slightly in the financial year 1994/5 compared with the year before (see Table 5). The budget of the core area (520km^2) of Manas was $515,119 in 1994/5 or $991 per km^2, much lower than Kaziranga's $1,552.

Third, Manas has several security problems. The intelligence network around Manas is ineffective. A group of informers needs to be re-established urgently, for which only a small sum of money would be required. Further aggravating the security problem, a new road in the adjoining Royal Manas National Park in Bhutan has been built. Construction commenced in 1994 to allow easier access into the area. This will benefit poachers and traders also, and is of concern to the Park staff.

The Park could face an additional security threat due to the fact that Manas re-opened to the public on October 1995, making it difficult to distinguish between poachers and legitimate visitors. It had been closed to all Indian and foreign tourists since 1989 as it was not then safe, but now the area is relatively stable. It is essential to protect the rhinos, whose whereabouts will be known once more by the public. Whether or not the Park is now revamped properly is critical to the future of this World Heritage Site, which is home to many endangered and several rare, endemic species.

Assam's Orang Wildlife Sanctuary

One other important rhino area in India has suffered recently, Orang (or Rajiv Gandhi) Wildlife Sanctuary. In 1992 only two of its hundred or so rhinos were poached, and 1993 witnessed only one rhino poaching incident, due to very good park management at the time. In 1994 seven rhinos were illegally killed, however, while in 1995 (up to 1 November), the figure reached a record nine, representing about 10% of the population. Again, reasons are similar as for Manas.

First, in 1994 there was a breakdown in law enforcement due to local agitation. The main radio set in the Sanctuary was stolen and not replaced as the Forest Department feared it would be stolen again. Therefore, communication with the forest guards in the field broke down. Guns were also stolen, apparently by Bodos, and senior Orang officials have been reluctant to release more guns to the forest guards. Deprived of their radio network and firearms, the morale of the forest guards has suffered and patrolling has been far less intense than in 1992 and 1993.

Second, there have also been financial constraints in Orang. Its government budget declined by over 12% (adjusted for inflation) from 1992/3 to 1993/4, but in 1994/5 it was increased to $152,521 or $2,018 per km^2, higher than for Kaziranga. Despite this, some of the camps are poorly maintained. Orang needs better management and stronger, more enlightened leadership to make available radio communications and firearms once more and to increase staff morale.

West Bengal

The state of West Bengal was once rich with rhinos. Today, two small, but growing, populations remain. In 1995 there were 35 rhinos in Jaldapara Wildlife Sanctuary (216.5 km^2) and 18 in Gorumara (expanded from an 8.5 km^2 wildlife sanctuary to a 79.52 km^2 national park in 1995). There was no poaching in either area in 1994 or 1995 (up to November), but there were four natural deaths: an old male died from fighting, a female calf was killed by a tiger, one drowned in a wallow, and a male died of lung congestion.

There are two main reasons for the lack of poaching. First, in 1995/6 the government budget for Jaldapara was $105,422 or $487 per km^2, and for Gorumara, $24,096 or $ 303 per km^2. Out of these budgets a small (but adequate) amount is paid to gather information on potential poachers, and it is obviously a good deterrent as there has been no rhino poaching since 1993 (S. Roy, Chief Wildlife Warden, West Bengal, pers. comm., 1995). Second, informal eco-development committees have recently been established, 10 next to Jaldapara, and four around Gorumara, consisting of local families who help protect and manage the wildlife.

Uttar Pradesh

There are two other, even smaller, rhino populations in India and there has never been poaching in either of them. Dudhwa National Park (see map) had 11 animals in 1992 and 13 in late 1995. These rhinos were translocated into this area in 1984 and 1985. The rhino sanctuary has remained safe from poachers, mainly because it is entirely electrically fenced. The other rhino population was kept secret by the Indian authorities until late 1995, the main reason, no doubt, for its survival. This population of at least five rhinos occurs in the Katerniaghat Wildlife Sanctuary, about 40 km east of Dudhwa, close to the Nepal border. The origin of these rhinos has fascinating political overtones. In 1986 13 rhinos from Nepal's Royal Chitwan National Park were translocated to Royal Bardia National Park in western Nepal, near India's border, to start a new population. Soon afterwards, three wandered out of Bardia and into India (Martin & Vigne, 1995). In 1991 25 more rhinos were moved from Chitwan to Bardia. From 1986 to 1994, 17 calves were born in Bardia while two or three more rhinos moved into India in and around the Katerniaghat Wildlife Sanctuary. At first, India's Forest Department staff fenced in the rhinos for the animals' security, but later a part of the fence was taken down to allow them to move wherever they wished (S.C. Dey, Addl. Inspector General of Forests and Director of Wildlife Preservation - for India, pers. comm., 1996). The Nepalese complained to the Indian authorities for not sending the rhinos back to Nepal. However, the official Indian policy remains as follows: "Wild rhinos do not understand international political boundaries; these rhinos are free to go back to Nepal, but it would be inappropriate to take any step to drive them back to Nepal, as that would be against the concept of trans-border movement of animals and trans-border species conservation" (Dey, pers. comm. 1996). Fortunately, rhino poachers do not exist in the area and for the moment they are relatively safe.

Nepal

The early 1990s were the worst years for rhino poaching in Nepal (see map) for over 20 years. In 1992 17 rhinos (from a population of over 400) were killed illegally in Royal Chitwan National Park and one was shot dead which had wandered out of the Park (Martin & Vigne, 1995). Royal Bardia National Park, Nepal's only other protected area for rhinos, which had a population of nearly 40 animals in 1992, lost four to poachers in the fiscal year of 1992/3 (Martin & Vigne, 1995). In contrast, in 1994 and

The base of a rhino horn has a honeycomb appearance that makes it very difficult to fake successfully.

1995 not one rhino was poached inside Chitwan and only one outside up to November (see Table 6). Similarly in Bardia, no rhinos were poached in the fiscal years 1994/5 and 1995/6 up to November 1995, although six had been poached in the previous two years (source: Department of National Parks and Wildlife Conservation). The decline in poaching is thus even more dramatic than for India. As for India, there are several reasons for this success in Nepal.

Table 6: Number of known rhinos poached in and around Royal Chitwan National Park, Nepal

Year	In Royal Chitwan NP	Outside Royal Chitwan NP	Total
1992	17	1	18
1993	5	4	9
1994	0	0	0
1995*	0	1	1

** up to mid-November*

Source: Department of National Parks and Wildlife Conservation

First and most importantly, by far, has been the larger budget allocated to intelligence gathering in 1994 and 1995 for Royal Chitwan National Park than previously. From 1991 to 1993 the annual average amount of money spent paying individuals on a regular basis to collect information and for rewards to informers around Royal Chitwan National Park was $1,359; the figure for the following two years was $6,041 per annum, over four times as much. Most of this money came from donations from foreign tourists who visited Chitwan's Tiger Tops Jungle Lodge. This money was collected by Nepal's branch of the International Trust for Nature Conservation (ITNC) (Charles McDougal, tiger researcher, pers. comm., 1995). The money was given to three people: the Chief Warden of Royal Chitwan National Park and the District Forest Officers (DFOs) of Chitwan and Nawalparasi (which both border the Park) to pay the informers (McDougal, pers. comm., 1996). The National Parks Department does not have a budget for intelligence funds due to the difficulties that would be involved in accounting for the money officially. From 1991 to November 1994, ITNC raised $15,884; about two-thirds was handed out as reward money and one-third for regular salaries to informers. These funds helped the authorities make many arrests. In 1994 14 rhino poachers and two tiger poachers were caught. In 1995 there were 10 seizures of tiger bones and skins along with 28 arrests of poachers and traders. There were also two rhino horn seizures with about six people arrested in 1995 (McDougal, pers. comm., 1996). Additionally, four people were arrested in 1995 for selling fake rhino horns (Ramprit Yadav, Chief Warden, Royal Chitwan National Park, pers. comm., 1995).

Second, the District Forest Officers, who have jurisdiction over wildlife outside the parks, have become more active against the rhino horn trade in some key areas.

The DFOs around Chitwan, Bardia and in Kathmandu have been using intelligence information more effectively and have been more aggressive against rhino poachers and traders. Chitwan District's DFO, Y.B. Thapa, even arrested a former Assistant Minister attempting to sell a rhino horn in Bharatpur town, just north of Royal Chitwan National Park, in 1995. After extensive bargaining, when the former Assistant Minister was going to accept the equivalent of $2,000 for his 350 g horn (the equivalent of $5,714 per kilo), he was arrested and put into jail for three months (Thapa, pers. comm., 1995). In late 1995 the Chitwan District DFO had 54 armed guards, 60 forest guards, 25 rangers and four assistant forest officers to protect the forests and wildlife in his district. In November 1995, there was a shortage of staff however, as eight armed guards were sent on training exercise, three were transferred, and a further three resigned. Poachers then shot a rhino 10 km north of the Park boundary, the only poached rhino in 1994 or 1995. The DFO found the carcass a few days later with the horn removed. 'Staff took the nails and seven sections of skin for storage. The DFO then allowed local people to help themselves to the carcass, an important measure to improve Park relations with neighbouring villagers. About 45 men and women took the meat, blood, urine and remaining skin, and eventually everything was taken. A few days later, however, a villager ended up in hospital with food poisoning from eating the decaying meat (Thapa, pers. comm., 1995).

Third, there has been increased police help. The DFO in Kathmandu with the police intercepted many illegal wildlife products in 1994 and 1995, including 11 leopard skins, a tiger skin, a rhino head and one rhino horn. Two fake rhino horns made out of water buffalo horn and a fake tiger skin made in India from cow and goat skins were also impounded. Several arrests were made (G.P. Bankota, DFO for Kathmandu, pers. comm., 1995).

Fourth, harsher sentences have been introduced. Penalties for rhino poaching increased in 1993 to a maximum of 15 years in jail and a 100,000 rupee fine (about $1,850 in late 1995). Unlike in India, these penalties are enforced and poachers are often jailed for a long period.

Fifth, park management in Chitwan and Bardia has improved, with a significant increase in patrol work. NGOs helped to establish two anti-poaching units in Chitwan and one in Bardia from 1993 to 1995. ITNC donated $5,365 to Chitwan's units and WWF Nepal gave $11,435 for all three units during this period (Ukesh Raj Bhuju, WWF Nepal, pers. comm., 1995). As well as these new anti-poaching units, the army based inside Chitwan and Bardia has been patrolling more frequently, and both patrol now at night, as well as in the day, concentrating their efforts on areas susceptible to poachers, such as the western side of Chitwan.

Tiger Tops staff with tourists ride on elephants to look for rhinos and occasionally are lucky enough to catch a glimpse of tigers.

Sixth, there has been adequate funding for the parks. In 1993/4 Chitwan's total government budget was the equivalent of $804,457 with the army receiving 65% of this. However, the full costs of the army are not covered by the Department of National Parks and Wildlife Conservation and therefore the real Park budget is higher. For 1995/6 Chitwan's estimated government budget was $879,620, including the army's share presumed to be still about 65%. If one adds contributions from NGOs, the total budget for Chitwan comes to about $900,000 or $966 per km^2. This is quite adequate for the Park which is more than twice the size of India's Kaziranga National Park. With competent senior officials to manage Chitwan and its finances, it was possible in 1994 to buy new anti-poaching equipment such as vehicles, radios and tents. However, with the growing human population around Chitwan and Bardia, poaching pressure will probably increase, and more effort will be needed to protect the rhinos in the future.

Conclusions

The conservation of the greater one-horned rhinoceros in India and Nepal has been a success for many years with the total population steadily growing. The main reason is that government budgets for rhino areas have been over ten times higher on average than those in Indonesia, Malaysia and Vietnam. The large budgets have enabled sufficient manpower for patrol work, up to one man per km^2, one of the highest for a rhino protected area owned and managed by a government anywhere in the world. The park budgets for India and Nepal's rhino areas have remained on average stable from 1993 to 1995 when corrected for inflation. On the other hand, there has been a recent big increase in the amount of money spent on intelligence gathering. This is therefore the main reason for the sharp reduction in poaching in 1994 and 1995 in both India and Nepal. Combined with this, Park management in the key rhino areas has improved and government officials have been more active in arresting poachers and traders. By contrast, Indonesia has essentially no intelligence system and officials know extremely little about Sumatra's poachers and the rhino horn trade to the detriment of the rhinos which have been steadily decreasing in numbers in recent years.

Nepalese and Indian wildlife officials have demonstrated that the most cost-effective method of saving rhinos is to spend money on an efficient intelligence network. In Royal Chitwan National Park less than one per cent of the total budget was spent on informers in the mid-1990s, yet this tiny amount was effective in catching and deterring rhino poachers. Officials trying to protect rhinos in other countries should also allocate money for an efficient intelligence gathering network and for more manpower with good leadership in the field. It would be encouraging if other countries could follow Nepal and India's example .

Acknowledgements

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9 Nepal destroys large stocks of wildlife products

(*Pachyderm*, January-June 1998)
EBM

For many years the Nepalese authorities have been collecting wildlife trophies from animals which have died in and around Royal Chitwan National Park. Those products found outside the park are stored in the Forest Department's rooms at Tikauli (Chitwan District) which come under the jurisdiction of the District Forest Officer at Bharatpur; those products found inside the Park are deposited at the headquarters of the Park at Kasara.

Table : Wildlife trophies recorded in government storerooms in Tikauli and Kasara, Nepal, as of 9 November 1998

Product	Tikauli	Kasara	Total
Rhino skin pieces	94(3,475 kg)	207 (869.5 kg)	1,201 (4,344.5 kg)
Rhino horns	32 (23.11 kg)	51 (35.33 kg)	83 (58.44 kg)
Rhino nails	498	865	1,363
Rhino teeth	0	2	2
Rhino skulls	3	6	9
Fake rhino skin pieces	2	7	9
Tiger and leopard bones	144 kg	99.4 kg	243.4 kg
Tiger skin pieces	9	4	13
Fake tiger skin pieces	10	0	10
Elephant tusks	1 (5.7 kg)	63 (66.38 kg)	64 (72.08 kg)

N.B. Most of these ivory tusks are derived from domesticated elephants owned by the Department of National Parks and Wildlife Conservation; they are cut to reduce the chances of people being injured.
Source: Gopal Prasad Upadhyay, Chief Warden, Royal Chitwan National Park, unpublished statistics

Until the early 1990s some of the rhino products such as the horns and nails were sent regularly to the Royal Palace in Kathmandu. With the advent of multi-party democracy and the subsequent decline in the power of the King, the homs and nails have remained in the stores at Tikauli and Kasara.

Park staff weigh and mark the rhino horns that they collect.

By late 1997 the stockpile of wild animal products had reached significant amounts (see Table) with the world's largest collection of skins and nails from the greater one horned rhino. A debate raged in Nepal amongst conservationists on what to do with these items. Some officials believed that it was becoming too much of a security risk and too expensive to look after these products and therefore they should be destroyed. Others thought that some of these items such as rhino skin should be sold to the local people who use it for religious purposes, earning money to help conserve endangered species in Nepal. Still other conservationists commented that many of these trophies ought to be distributed to museums and schools to educate the general public on wildlife matters. Finally, on 22 March 1998 at Tikauli, the Nepal government authorities burnt most of these trophies, but not the potentially very valuable horns.

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10 Ivory in Kathmandu

(*Oryx*, October 1998)

EBM

Abstract

Elephant ivory is still on sale in Kathmandu, in Nepal, despite the fact that this transgresses the country's legislation. In a recent survey of 184 shops frequented by tourists 1454 ivory items were found for sale. Trade in ivory is at a very low level, but dealers are still importing ivory. The Forest officers and police need to be motivated to confiscate the ivory and take the offenders to court. Without fully implementing Nepal's 25-year-old National Parks and Wildlife Conservation Act, the authorities are indirectly encouraging people to flout the restrictions.

Introduction

Nepal's geographical position and lax enforcement of its wildlife law have led the country to become a significant entrepot for tiger bones, rhino horn, shahtoosh, musk, clouded leopard skins, bear bladder and ivory (Bauer 1995; Wright and Kumar, 1997). There have been several surveys of the retail shops of the capital, Kathmandu, concentrating on rare cat skins and shahtoosh, the wool of the Tibetan antelope (Van Gruisen and Sinclair, 1992; Heinen and Leisure, 1993; Menon, 1994; Wright and Kumar, 1997). However, no study has been carried out on the display and sale of elephant ivory, which is totally banned by Nepalese law. In February 1998, I visited 184 souvenir and jewellery shops in Kathmandu's main tourist shopping areas and made an inventory of the ivory items: type of object, where it was produced and its retail price. I asked the shopkeepers about the nationalities of the buyers and about sales turnover. In addition, I interviewed the remaining carver from the most prominent Nepalese family of ivory craftsmen whom I had visited previously in 1982 and 1991.

Recent history of the ivory-carving industry

It is not known for how long ivory has been carved in Nepal, but in the Kathmandu Valley the main family making ivory items claims that its ancestors were carving ivory 300 years ago. Art historians believe that Nepal's ivory carving industry goes back at least to the 17th century, and some think it perhaps started as early as the eighth century (St Aubyn, 1987). During the first part of the 20th century, craftsmen worked for members of the ruling Rana Dynasty (1846-1951), and for other wealthy Nepalese families. There were probably fewer than 30 ivory carving families, and almost all worked in the town of Patan, just south of Kathmandu. Patan is the traditional home of

The two young men in this 1982 photograph belonged to the main ivory carving family in Patan, the southern town of Kathmandu Valley, renowned for producing Nepal's finest arts and crafts.

Nepal's skilled craftsmen. In the middle of the century carved tusks were popular and items made from ivory included boxes, picture frames, Tibetan prayer wheels, necklaces, sculptures, combs, dice and handles for traditional knives (kukri). Few objects were exported, although occasionally sets of dice were sent to Tibet.

After the overthrow of the Ranas and subsequent political instability, demand for ivory dropped. It did not pick up again until the tourist boom in the 1970s. At that time the ivory came from a variety of sources. The Ranas, who had brought back large ivory tusks from hunting expeditions in Africa, sold them to craftsmen after they lost political and economic power. So did other formerly wealthy Nepalese who had acquired tusks as decoration for their houses. Merchants, who obtained raw ivory removed from working elephants in Nepal and through businessmen in India, also supplied the craftsmen. In 1982, carvers paid Rs500-600 ($US38-46) per kg for broken and damaged ivory and Rs1200-1500 ($US92-115) per kg for good quality tusks. The items made were generally ordered in advance by the shopkeepers and sometimes by private individuals. They wanted sculptures of gods, goddesses and animals. There was also a demand for small ivory window frames and ear picks. The maximum amount of money a skilled ivory craftsman could make, working full time in 1982, was $US200 a month, considered to

be a large sum at that time. There was strong competition from cheap ivory articles imported from Hong Kong, which caused some craftsmen to take up wood and yak-bone carving instead.

The ban on international commercial trade in ivory among Parties to the Convention on International Trade in Endangered Species (CITES), which came into effect in 1990 as a result of the decision to list the African elephant on Appendix I of CITES, had an even greater impact on the Nepalese ivory craftsmen. The main ivory carving family in Patan purchased only 10 kg of ivory in 1990 and made about a dozen sculptures of gods and goddesses, and 15 prayer wheels. A year later, only a few people were still working full time in ivory. Sales of finished pieces had plummeted by over 70 per cent. On the other hand, the price for good-quality raw ivory rose to Rs8000 ($US187) per kg because traders found it difficult to obtain. What supplies they could get came mostly from Royal Chitwan National Park and pieces collected in the southern town of Bharatpur.

Ivory carving in Nepal today

Although there had been eight members of the main ivory-carving family active in 1982, only one was still carving in 1998. He said that he believed he was the sole remaining ivory carver in the Kathmandu Valley. The small amount of raw ivory that he uses comes from the trimmed tusks of domesticated elephants in Nepal. Shopkeepers usually bring the ivory to him to make statues of the Hindu god Ganesh and prayer wheels, for which he charges Rs200 ($US3.25) a day for his labour, which is the same amount a skilled carpenter would earn. He told me that if he wanted to buy any raw ivory, he would have to pay Rs5000 ($US81) per kg for poor quality parts of tusks and up to Rs15,000 ($US242) per kg for the best quality. This ivory carver works at home, using at least 11 different metal tools that he has forged and an electric lathe that he purchased some time ago. He does not think there is any future for ivory carving in Nepal and consequently has not trained his son nor any other relative in his craft, breaking the family's centuries-old tradition.

Survey of Kathmandu's souvenir and jewellery shops

The 184 shops surveyed are in Lal Durbar, New Road, Thamel, Durbar Marg, Durbar Square and in the larger hotels, all places attracting tourists. Business was slow and the shopkeepers willingly gave their time to answer my questions and to tell me where their items were made. I examined objects for retail sale and found that 71 of the shops, or 39 per cent, had one or more items made out of elephant ivory. I saw a total of 1454 ivory articles for sale. When I asked if there were additional items, the shopkeepers told me that they had shown me almost all their pieces, because they wanted to display what they had in order to attract customers.

Just over half (53 per cent) of the ivory items were made in Nepal, 29 per cent came from China, 13 per cent from India, 4 per cent from Tibet and 1 per cent from Japan, according to the shopkeepers. Surprisingly, there was scarcely anything left from the Hong Kong imports. Not a single object had been made in Africa, and the only piece from Europe was an old brush that had been made in France. Of the 1454 items I saw, 40 per cent were sculptures, 13 per cent miniatures painted on ivory, 13 per cent netsukes (Japanese-style toggles),12 per cent pendants, 10 per cent bangles, 2 per cent Chinese-style panels, 2 per cent necklaces, 1 per cent rings, 1 per cent boxes and 6 per cent miscellaneous pieces. There were some items made over 50 years ago in Nepal and Tibet, but most were less than 30 years old.

The ivory items for sale were the specialities of craftsmen of different nationalities. The Nepalese pieces were sculptures of Hindu gods and Asian animals, pendants, bangles, paintings and boxes. The Chinese pieces were sculptures, netsukes and painted panels. The Indian products were paintings, bangles, sculptures and necklaces while those from Tibet included hair ornaments, prayer beads, phurpas (for Buddhist rituals), sculptures and snuff boxes. Japanese articles were statues, seals and netsukes. The quality of the workmanship varied greatly, from carelessly carved animal figures and poorly executed paintings to superbly worked sculptures.

The retail value of the 1454 pieces was approximately Rs20,805,840 ($US335,578). This figure is an estimate because sometimes the shopkeeper found it too tedious to state the price of every item, and instead gave a price range for similar objects. Undoubtedly also, a prospective customer could bargain and perhaps obtain as much as a 20 per cent discount. None of the shops dealt in ivory exclusively, nor did ivory make up even half their items for sale. The most expensive ivory articles tended to be found in the jewellery shops. The highest priced item was a 30-cm-long chariot pulled by four horses; it had been carved in India and was offered for Rs260,000 ($US4194). Of the Nepalese sculptures, a 20-cm-high Garuda was the most expensive at Rs125,000 ($US2016). The cheapest items were Nepalese rings for Rs50 ($US0.80) each.

The shop owners had purchased Nepalese-made ivory articles from people walking in from the street, wanting cash; they had also commissioned pieces from craftsmen. Tibetan traders brought in ivory items from Tibet and China, along with religious scroll paintings, tea pots, snuff boxes, silver bowls and jewellery; sometimes these traders used the money they earned from selling their goods to the shops to pay for a journey to India to see the Dalai Lama. Indian businessmen brought ivory sculptures, paintings and jewellery directly to the shops; and shop owners go occasionally to Rajasthan and Delhi to buy ivory products. The Japanese items belonged to a wealthy businessman running a souvenir shop in a hotel; he bought them in Japan in the early 1980s to sell to Japanese

tourists who visited Kathmandu, but more than 15 years later 21 of the items remained on his shelves.

The ivory retail trade in Kathmandu is now so slow that it is unprofitable. The value of sales has fallen by more than 90 per cent since 1990. Citizens of Canada, the UK and the USA, who had been the main buyers, are no longer buying ivory in Nepal. Practically the only remaining customers are a few French, Germans, Italians, Japanese and Spanish. They prefer small items that can be concealed easily in their luggage. Nepalese used to buy religious statues but they seldom do so today because they cannot afford them. As a result of restrictions on the international commercial ivory trade, shop owners no longer try to export items wholesale. They claim that the ivory trade is dying and they attribute that almost entirely to the international ban. Nevertheless, sometimes a shop owner buys an article made in India, Nepal or Tibet because he thinks it will appeal to tourists.

Nepal's wildlife legislation

The National Parks and Wildlife Conservation Act of 1973, which has been amended four times, is one of the strictest in the region, with severe penalties for killing protected animals or selling their products. The law even prohibits the display of such products, no matter how old, in a shop without a permit. When the law came into effect 25 years ago, shop owners wanting to sell wildlife products in stock were required to apply for a permit. No one ever applied for one (Director General of the Department of National Parks and Wildlife Conservation, U. Sharma, and his predecessor, T. Maskey (pers. comm.). Thus all the ivory in Kathmandu's shops is illegal.

The Department of National Parks and Wildlife Conservation is responsible for implementing the law inside the parks and reserves. The Department of Forests is responsible for everywhere else, but it does not have a specific law enforcement unit (Heinen et al., 1995; Maskey, 1998). According to U. Sharma and T. Maskey (pers. comm.), Forest Department officials can search shops for endangered wildlife products, in co-operation with the police. The Customs Department has the authority to confiscate wildlife products going in and coming out of the country. However, the Management Authority for CITES in Nepal is the Department of National Parks and Wildlife Conservation, which, as noted above, has jurisdiction only inside protected areas.

In practice, no government authority monitors the sale of ivory in the souvenir and jewellery shops, which is why the shopkeepers continue to break the law. However, the Forest Department through the District Forest Office in Kathmandu does confiscate other wildlife products occasionally. In the last financial year and up to 12 February 1998, officers, seized 7 leopard skins, 80 pieces of leopard bone, 1 leopard head, 1 bear

bladder, 16 monkey heads, 57 tortoises, 1 musk deer pod, 1 python, 9.8 kg of tiger bones, 1 tiger skin and 2 rhino bones, according to S. Joshi , the Assistant Forest Officer in Kathmandu (pers. comm.).

Conclusions

Although the sale of ivory products is illegal and penalties for dealing in ivory are severe, it is carried on openly in Kathmandu's jewellery and souvenir shops. While at least two-thirds of the stocks pre-date 1990, shopkeepers continue to buy items recently imported from India and Tibet, and one Nepalese carver still supplies articles he makes. The fact that the market for ivory has declined sharply is not sufficient reason to ignore it. However, the authorities are doing just that: they are aware that the illicit trade in ivory exists but show no interest in stopping it. Forest Department officers and police need to be motivated to confiscate the ivory in the shops and prosecute the offenders. Without fully implementing Nepal's National Parks and Wildlife Conservation Act, the authorities are leaving the door open for infractions and are indirectly encouraging people to flout the restrictions.

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11 Will new community development projects help rhino conservation in Nepal?

(*Pachyderm*, July- December 1998)

EBM

Most Nepalese Hindus regard the rhino as a very special animal having curative properties and religious significance.

Introduction

Rhino conservation in Nepal has been a notable success. The greater one-horned rhino population increased from about 95 animals in 1968 to an estimated 550 by late 1997. The Department of National Parks and Wildlife Conservation (DNPWC) is now starting a project to increase benefits to the people living near Royal Chitwan and Royal Bardia National Parks. However, the money allocated by His Majesty's Government of Nepal to these Parks has declined recently. If these budgets continue to fall, poaching may

increase. This paper will look at the reasons for success of Nepalese rhino conservation from 1994 to 1997 and will describe the new projects intended to benefit villagers living around the two Parks as well as the rhinos and other wildlife.

Anti-poaching activities

Although there was serious rhino poaching in the early 1990s (Martin and Vigne, 1995), there were few poaching incidents from 1994 to 1997 (see Table 1). No rhinos have been poached in Bardia since November 1993 and the population rose to 44 in the Park by December 1997. From 1995 until the end of 1997 only five rhinos were illegally killed in the Chitwan area, which is quite low considering the 1997 population estimate of 500; inside Chitwan Park not a single rhino was poached in 1995 or 1996, although one rhino was speared and killed on Ichami island in early 1997.

Table 1: Numbers of known rhinos illegally killed in Nepal from 1994-1997

Year	Inside Royal Chitwan National Park	Outside Royal Chitwan National Park	Inside and Outside Royal Bardia Park	Total
1994	0	0	0	0
1995	0	1	0	1
1996	0	1	0	1
1997	1	2	0	3
Total	1	4	0	5

Sources: Department of National Parks and Wildlife Conservation, and District Forest Office, Chitwan District, unpublished statistics

Outside Chitwan Park, in 1995 an unsexed rhino was shot and killed just north of the boundary at Lankaline. In 1996 a female rhino was killed by a bullet just north of the Park at Sungumara. In April 1997, a female rhino was poached north of the Park at Saguntole, north-east of Bharatpur in Chitwan District. A gang of eight people chased this rhino until it fell down a hill and died. The villagers removed the small horn - perhaps weighing 300g - and sold it to a person in a village in Chitwan District for 20,000 rupees ($345) which is the equivalent of $1,148 per kg. The poachers were later caught and jailed (anonymous Forest Officer, Chitwan District, pers. comm.). Later in the year a mother was shot and killed, again at Saguntole. Her calf was taken by the Parks authority and is being hand-reared at Sauraha on the northern boundary of the Park by the King Mahendra Trust for Nature Conservation (KMTNC) and the Parks jointly.

Rhino poaching has remained low since 1994 for a number of reasons. The price of rhino horn has not increased on the world market in US dollars so there has not been a greater incentive to seek out and kill rhinos (nevertheless, the value for horn remains extremely high). Another reason is that penalties (fines and imprisonment) were increased in 1993 (Martin, 1996). These penalties have been enforced and have certainly deterred some potential poachers. The number of rhino poachers arrested in and around Chitwan declined from 37 in 1993 (Martin and Vigne, 1995) to 15 in 1994 to only five in 1997 (see Table 2). The last gang going after rhinos was caught near Royal Bardia National Park in late 1993 and six people were arrested.

A third reason that rhino poaching has remained low is that the intelligence network, including paying informers, continues to be effective. However, payments for rewards for Chitwan and Bardia, which are distributed solely by the Nepal branch of the International Trust for Nature Conservation (ITNC), declined in 1996 and 1997 compared with the previous two years. This was largely because the park wardens and district forest officers (DFOs) of Chitwan and Nawalparasi Districts did not feel the need to request more money, due to the decline in poaching. In 1996 ITNC paid 48,000r ($853) - half to the Chief Warden of Bardia, a third to the DFO at Nawalparasi District and the rest to Chitwan Park. In 1997 ITNC only paid 2,000r ($34) due to lack of requests from the government authorities (Dinesh Thapa, officer in charge of dispersing funds from ITNC in Nepal, pers. comm.). It is relevant to note that rhino poaching was higher in 1997. Both the present Director of Nepal's Parks, Uday Sharma, and the previous Director, Tirtha Maskey, credit the paying of this intelligence money as one of the most important factors in reducing both rhino and tiger poaching in Nepal (pers. comm.).

Table 2: Number of rhino and tiger poachers in custody from 1994-1997

Year	Rhino poachers caught in and around Royal Chitwan NP	Rhino poachers caught in and around Royal Bardia NP	Rhino poachers caught in and around Royal Chitwan NP	Tiger poachers caught in and around Royal Bardia NP
1994	15	0	0	0
1995	3	1*	12	0
1996	6	1*	2	0
1997	5	0	3	0
Total	**29**	**2**	**17**	**0**

**Poacher killed in encounter with Park guard*

Source: Maskey, 1998

Because rhino horn is extremely valuable, middlemen in Nepal export it for sale to eastern Asia.

A fourth reason for the success in rhino conservation has been the greater participation of non-government organizations (NGOs) in anti-poaching activities. Before 1991 there were no anti-poaching units as the presence of the army stationed inside Chitwan and Bardia was considered to be deterrent enough. Since then, however, anti-poaching units have been introduced, funded mainly by ITNC and WWF Nepal. By January 1998 there were five such units inside Chitwan under the control of the Chief Park Warden, and two units posted outside the Park in Nawalparasi District and in Chitwan District under the control of the DFOs. Each unit inside the Park has about five men: one senior game scout, three game scouts and one or two informers (working outside the Park). The game scouts are part of the Park's regular staff, while the informers are recruited from the nearby villages. The units patrol on foot or on elephants. The two anti-poaching units in the districts together employ 11 people with about half of them involved in intelligence in the villages. Along with the one battalion of men from the Royal Nepal Army who are trained inside the Park to deter poachers and other illegal activities (such as cattle grazing and tree felling), the seven new anti-poaching units in and around Chitwan are very effective.

Three anti-poaching units were established in Royal Bardia National Park by early 1998. Each unit has a ranger, senior game scout, four game scouts and an informer. Together

with the Army's two companies stationed within Bardia to protect the wildlife, the overall anti-poaching activities have greatly improved. No rhinos have been poached since 1993, although other species continue to be poached. In 1996 sambar, chital and nilgai were illegally killed, while many people poisoned fish and trespassed in the Park with cattle; on one day alone 45 people were caught collecting illegal firewood. There were also eleven occasions when poachers' shots were heard or poachers carrying guns were seen (Bhatta, 1997).

Improved patrolling is helping to reduce poaching in general in Chitwan and Bardia, and more co-operation among the staff of the Army, Forest Department and the Parks is an important fifth reason for the decline in rhino poaching. This co-operation must continue for the morale of the various government departments' staff protecting the rhinoceros to stay high, and for dedication to rhino conservation to remain strong.

A sixth aspect contributing to the greater protection of the rhinos has been new public relations campaigns. For example, the DNPWC has put up posters in schools and other public places in the Bardia area stating that rewards will be paid up to 10,000r (worth $172 in 1997) for information on poachers and traders in wildlife products. The Chief Warden of Bardia, P.B. Shrestha, thinks that this has been very effective for Bardia, (pers. comm.). NGOs, especially WWF Nepal and KMTNC have been producing publications and posters and starting other conservation awareness projects to raise the consciousness of the Nepalese on the importance of conserving their rhinos, as well as other species, and the habitat.

While these factors combined have been responsible for reducing rhino poaching in Nepal overall, perhaps the most important has been maintaining sufficient budgets, thus allowing a high density of manpower in the Parks. This manpower for such relatively large areas is what makes Nepal (and India) unique. Numbers of personnel in Chitwan and Bardia have remained the same for years now and appear to be sufficient to deter rhino poaching. Chitwan's Park staff numbered 256 in 1993 and 242 in late 1997. There are 800 Army staff sanctioned for Chitwan with about 600 actually in the Park at any one time. The total number of staff works out at nearly one man per square kilometre, a very high density for an area of 932 km^2. In Bardia, the number of Park staff has remained almost identical over the past few years with 132 positions allocated in late 1997 and 126 actually filled. There are about 500 Army personnel in Bardia with approximately 400 on the ground at any one time. This gives Bardia about one person per 2 km^2, again a very high density for an area of 968 km^2.

Both Parks are suffering from declining budgets, however. Concerning rhinos, this is especially serious for Chitwan, having such a large and thus potentially vulnerable rhino

population. Chitwan's Park budget was $219,488 in 1994/5 and only $117,672 in 1997/8 (see Table 3). These figures exclude the Army budget which is more than twice as large and has probably been stable for some years. Various NGOs, especially WWF Nepal and KMTNC have supplemented Chitwan's budget. For example, WWF donated Rs1,024,000 ($17,000) in the financial year 1997/8 for the seven anti-poaching units in and around Chitwan Park, plus money for operation costs for the units in Chitwan and Nawalparasi Districts, as well as radio sets and fuel for the Park (U.R. Bhuju, WWF Nepal, pers. comm.).

Table 3: Department of National Parks and Wildlife Conservation budget for Royal Chitwan National Park, 1994/5 to 1997/8

Year	Nepalese rupees	US dollars
1994/5	10,893,200	219,488
1995/6	9,748,400	183,241
1996/7	7,036,000	123,072
1997/8	7,065,000	117,672

Source: Royal Chitwan National Park, unpublished statistics

Ironically, while Chitwan's Park budget has declined, there has been a huge increase in the revenue collected from the Park since 1988 (see Table 4) due to the growth in the number of visitors (see Table 5). The amount of revenue earned by the Park in the financial year 1996/7 (65% from entrance fees, 16% from elephant rides, 9% from royalties from seven lodges inside the Park, and 10% from other activities) is over five times greater than the budget expenditure. In order that rhino conservation continues to flourish, the government must expand the DNPWC budgets for both Chitwan (see Table 3) and Bardia (see Table 6).

Community development projects around Royal Chitwan and Bardia National Parks

Several government officials and private conservationists believe that rhino conservation is improving in Nepal due to recently introduced community development projects around Chitwan and Bardia. G.P. Upadhyay and P.B. Shrestha (chief park wardens of Chitwan and Bardia respectively) believe this is so, as does T. Maskey, the previous Director of DNPWC. Is there any convincing evidence yet to prove the assumption?

People living close to Chitwan or Bardia Parks may obtain permits to collect reeds from the parks at certain times of the year for building shelters.

Community participation projects have been in place since the 1980s. In 1994 a major project was initiated by the Government of Nepal with assistance from the United Nations Development Programme (UNDP) called the Parks and People Project. The project aimed to assist people living around the five parks and reserves in the Terai region of southern Nepal. User groups, consisting of people from the surrounding communities, initiated and supervised the community-based activities. UNDP funding was given for the first three years. By June 1997 33 user groups had been set up for the Chitwan area alone and there were 37 by early 1998.

The community projects around Chitwan Park are especially relevant to rhinos as Chitwan contains 91% of Nepal's rhinos and there are over four times as many people in the buffer zone around Chitwan as compared with Bardia. Pressure on the Park's resources will increase unless the local villagers improve ways to produce their own sources of food, firewood and fodder; such eco-development projects are essential as the human populations grow. Furthermore, rhinos do cause direct harm to the villagers, as well as villagers to rhinos, so some schemes are especially important in order to protect people and rhinos from killing or injuring each other.

Table 4: Revenue raised in Royal Chitwan and Royal Bardia National Parks for various years

Year	Royal Chitwan National Park		Royal Bardia National Park	
	Rupees	US dollars	Rupees	US dollars
1972/3	1,729	?	n/a	n/a
1982/3	1,167,250	c.84,891	64,092	c.4,661
1987/8	3,370,140	148,792	115,149	5,084
1988/9	4,795,565	188,431	1,121,708*	44,075*
1989/90	13,449,911	476,103	2,746,037*	97,205*
1990/1	20,105,000	560,028	3,171,006*	88,329*
1991/2	27,157,144	636,510	4,039,610*	94,715*
1992/3	39,680,500	866,386	1,233,249	26,927
1993/4	36,071,299	735,249	1,884,669	38,416
1994/5	41,527,368	836,739	1,320,650	26,610
1995/6	46,878,346	881,172	1,683,630	31,647
1996/7	48,290,662	844,685	2,411,218	42,176

**The increased revenue is due to timber sales*

Sources: Royal Chitwan and Bardia National Parks, unpublished statistics

Table 5: Number of Tourists to Royal Chitwan National Park and Royal Bardia National Park, 1993/4 to 1996/7

Year	Royal Chitwan National Park	Royal Bardia National Park
1993/4	58,924	871
1994/5	64,749	1,042
1995/6	83,898	1,855
1996/7	96,062	3,111

Source: Royal Chitwan National Park, unpublished statistics

Table 6: Department of National Parks and Wildlife Conservation budget for Royal Bardia National Park, 1995/6 to 1997/8

Year	Nepalese rupees	US dollars
1995/6	16,634,000*	312,669*
1996/7	8, 290,000	145,006
1997/8	8,102,500	134,952

**The budget is high because extra money was allocated to buy more land for blackbucks.*

Source: Royal Bardia National Park, unpublished statistics

Between April 1996 and April 1997 (Nepalese year 2053) two people were killed by rhinos and two more by other mammals in the 750 km^2 buffer zone around Chitwan Park inhabited by 300,000 people. The government policy is to pay compensation for loss of human life on an individual basis. More than 80% of the incidents in which people are seriously injured by wild animals involves the sloth bear while the next most dangerous animal is the rhino, followed by the leopard, wild boar and tiger respectively (Silwal, 1997). Wild animals also attack livestock. Of the estimated 20,000 livestock within the buffer zone, 1,050 were injured or killed in this same year, especially by leopards, costing the farmers about 2,000,000Rs ($35,000) in losses. Wild animals also cause much damage to crops in the buffer zone around Chitwan: an estimated 40 tonnes of grain and 0.87 tonnes of vegetables were destroyed between 1996 and 1997. Rhinos generally cause the worst damage, followed by deer and wild boar. Rhinos are most destructive from July to January, eating and trampling wheat, maize, mustard and other crops (Silwal, 1997). As the government does not offer compensation for crop damage, resentment towards wildlife is common.

In order to reduce the damage done by wild animals to people, livestock, crops and also to structures, the Parks and People Project set up an "Animal Preventative Infrastructure Scheme" around Chitwan Park. Villagers have dug trenches, erected barbed-wire fences, grown barriers of spiny plants, especially *Acacia arabica*, between the trenches and fences and have set up stall-feeding for their livestock to keep them safely confined. This scheme was started around Chitwan in May 1997. By December 1997 18.1km of barriers had been erected, mostly around Meghauli (at the airfield on the west side of the Park) and Kasara (on the north boundary where the Park headquarters are located). UNDP paid for the materials and the user groups supplied the labour. By February 1998, this barrier was keeping out all the deer, 75% of the wild boar, but only half the rhinos. The scheme has been so successful that the villagers plan to construct another 40 km of barriers in 1998 on the north boundary of Chitwan (B.B. Silwal, Buffer Zone Development Officer for Royal Chitwan National Park, pers. comm.). The barriers are protecting wildlife and people alike and are significantly reducing the antagonism towards wild animals.

The Parks and People Project has also been improving the skills of the villagers around Chitwan and elsewhere in the Terai in order to reduce their need for Park resources. For example, people are being trained in farming, bee-keeping and stove-making. Conservation education programmes are being initiated, community forests established, and several eco-tourism ventures have started, such as with the Tharu villagers around Chitwan Park who are being trained to make bamboo and metal handicrafts to sell to tourists. In order to increase the people's income further, some are being taught bookkeeping and the Parks and People Project has established a savings and credit programme. Other projects are improving the physical infrastructure (such as roads and

Poor people living in the buffer zone may obtain for a very small fee permits to cut grass for thatch and fodder for a few days each year inside Chitwan National Park.

schools). The villagers are also helping in Park management in order to reduce conflict between villagers and wild animals (Parks and People Project, 1997). Some schemes are obviously more relevant to rhino conservation than others with the barriers helping rhinos the most.

Besides this UNDP-initiated project, local NGOs are involved in community development schemes around Chitwan Park. One of the most successful is an eco-tourism project which was set up in the previously degraded Baghmara Forest on the northern border of Chitwan Park and a few kilometres from the main tourist area, Sauraha. The KMTNC and USAID were the principal implementers of the project. In 1989, the KMTNC organised the planting of fast-growing trees on 32 hectares of severely overgrazed land within the 400-hectare area of Baghmara Forest. By the end of the first year a user group was formed to manage this plantation. Over the years more of the land was re-planted with trees, and grass areas were developed. Villagers constructed fences and trenches around Baghmara with help from the Trust and the Park authorities. In June 1995, the District Forest Office formerly handed over the whole of Baghmara Forest to the local user group committee to manage for themselves as the Baghmara Community Forest. It was opened for tourism at the end of 1995 and consisted by then of forests, grasslands,

waterbodies, nature walking trails and an elevated platform (machan) from which to view animals at night. By late 1997 the area was home to 20 rhinos as well as leopards, tigers, deer, wild boar and 125 bird species which had crossed over from Chitwan Park.

As the Baghmara Community Forest is so close to the lower-priced and biggest tourist centre in southern Nepal (Sauraha) and because the entrance fee for foreigners (excluding Indians) is only 100r ($1.72 in 1997) compared with 650r ($11.19 in 1997) for the Park, many foreigners are visiting Baghmara. From November 1995, when it opened, to the end of 1997, the income from tourism was 1,700,541r ($29,280), just over half of which was from elephant rides alone, and the rest from a fee of $10 for a night on the machan, canoeing charges and jungle walks (KMTNC, 1997 and Khatri, 1998).

As well as the tourist revenue earned by the user groups for the community, Baghmara supplies grasses and firewood to its community (584 households consisting of 3,615 people). In 1997 the community collected grasses making up 31%, and 657,860 kg of firewood making up 23% of their requirements (KMTNC, 1997).

The Baghmara Community Forest has directly benefited rhinos. Fewer of the villagers now illegally enter the Park as they have access to their own supply of fodder and firewood in Baghmara. This has reduced disturbances to the rhino and other animals in the Park. Furthermore, there are fewer wild animals raiding crops due to the new barriers between the Forest and the arable land. Farmers are therefore less antagonistic towards rhinos and are less likely to be involved in rhino poaching. The 20 rhinos presently in the Forest are benefiting from the newly enriched habitat and they are well protected by the villagers, being of financial gain to them through tourism. Three rhino poachers came into the Forest with two chains to snare rhinos in late 1997 but they were caught by the villagers and handed over to the authorities (Top Khatri, Project Director, KMTNC, Sauraha, pers. comm. and Khatri, 1998).

A significant change promoting community development took place in the mid-1990s. The government gazetted the buffer zones around parts of Chitwan and Bardia Parks in 1996 to be managed by the communities living within the buffer zones, not by the Forest Department as before. In early 1998 the local people and Parks Department established the Bardia Buffer Zone Development Council. The Council, consisting of the Chairman of each user group, will develop an operation plan for the 460 km^2 buffer zone around Bardia Park where about 77,000 people live. When approved by the Chief Warden of Bardia, perhaps 50% of the total Park revenue will go to this Council for projects. In Chitwan the Buffer Zone Development Council was being formed in early 1998, consisting of members of the 37 user groups, the District Development Committee and the Chief Warden of the Park. One new policy development by the Council was that

Sometimes when grass-cutting is allowed in the parks, people try to smuggle out wood under their bundles of grass and reeds.

the user groups in the buffer zone of Royal Chitwan National Park were allotted some compensation for livestock losses and human injuries. The group members decide on the amount of compensation for individual cases. So far (up to November 1998) members in Chitwan have not paid for losses occurring within the Park forests, but have paid for those that occurred outside the Park boundary (U.R. Sharma, pers. comm.). Most importantly, the Council will approve projects for the 750 km^2 buffer zone (with its 300,000 people) and finance them with 50% of the total Park revenue (G.R. Upadhyay, and T. Maskey, pers. comm.). Using Park revenue as the major funding source for community development is a new phenomenon in Nepal and will, it is hoped, bring the villagers more money for projects.

These projects will receive potentially a large amount of money, as the Parks generate substantial tourist revenue. For Chitwan, 120,000,000r ($1,935,480) has been collected (Chitwan's total tourist revenue for 1996 and 1997) and was put into a special account by early 1998. If 50% is earmarked for the new buffer zone projects, nearly $1,000,000 will be available initially (T. Maskey, pers. comm.) and perhaps $500,000 per annum could be allocated for the next few years! By early 1998 it was not yet known what

projects would be funded and which specifically would help rhinos. The buffer zone projects are in their infancy, and their planning and management will be fundamental to their success.

Conclusions

The Nepal government authorities - Parks, Army and Forest Department - have successfully conserved rhinos for many years. There were extremely few rhinos poached from 1994 to 1997. The government spends over $500 per square kilometre each year on anti-poaching activities (especially for manpower on the ground) for both Chitwan and Bardia Parks, one of the largest amounts per unit area in the world. Furthermore, Chitwan Park, with 91% of the country's rhinos, has about one person per km^2 in the Park protecting rhinos, again one of the highest concentrations in the world. Bardia Park has about one person per 2 km^2, also very high. The intelligence system, financed by NGOs, has been very effective and the new anti-poaching units, also with NGO assistance, are proving successful. The recent severer penalties for poaching rhinos and trading in the horns have also helped rhinos greatly since the mid-1990s. Education of the villagers about conservation is continual and beneficial in improving relations with the Parks. Overall, the high morale, level of honesty, co-operation and motivation of those involved in rhino conservation may be the most important factors. These conservation measures have proved to be successful in Nepal.

Community development around Chitwan and Bardia Parks is a relatively new conservation strategy, although the idea has been mooted for years. Projects were funded by the government, the United Nations and NGOs in the late 1980s and early 1990s, especially around the main rhino area of Chitwan Park. Barriers and the development of Baghmara Community Forest have already benefited rhinos. In the late 1990s the Parks Department takes over the major funding of community development around Chitwan and Bardia Parks and is developing more schemes in the buffer zones, gazetted for community management in the mid-1990s.

There are, however, certain inherent problems with community development schemes that need to be carefully monitored and managed. One major problem with community management of buffer zones is that they attract outsiders because of the new resources. The arrival of more people puts increasing pressure on park boundaries with their needs for water, firewood, grazing, fodder, medicinal plants, fish and meat. This problem has occurred in community projects already being implemented in Africa. The user groups around Chitwan and Bardia must find a way of limiting new people entering the area to prevent the natural resources within the buffer zones and Parks from being over exploited.

There is also a danger that the villagers will consider the new funding simply as a 'government hand-out', raising undue expectations, rather than as money available directly through their own wildlife conservation efforts in the Parks and buffer zones. It is important for the local community to plan and decide what projects are required to reduce conflict between wildlife and people, how much money is necessary to implement the projects, and who will receive and supervise the funds to avoid corruption and mismanagement. The present system of electing people to the user groups and then organising a Development Council, which will liaise closely with the Forest and Parks Departments, is good in theory and it is vital that it succeeds in practice if wildlife conservation through community development is to work.

Already some conservationists in Nepal are saying that community development projects have helped to reduce rhino poaching. Yet it is still too early to tell, as most of the projects were established in the late 1990s, after the rhino poaching had been reduced in the mid-1990s. By early 1998 the major projects in the buffer zones had not been funded. Even if they had all been started in the mid-1990s, it is very difficult to link most of these projects with direct conservation success. Only the Baghmara Community Forest project has actively saved rhinos through arrests of poachers. It is hoped that when the major projects are under way there will be similar successes, but community development has not yet had a measurable impact on reducing rhino poaching.

Many proponents of eco-tourism argue that bringing in tourists is the best use for certain pieces of land, ecologically and financially. The development of a sustainable eco-tourism project requires time, and often, large amounts of money, usually with help from outside the country. Also, such projects often become dependent on continued external funding to cover running costs. Donor fatigue in many countries is becoming more common and local sources of funds must be found for such projects to continue. Nepal, however, is not seeking large amounts of foreign funding, having the benefit of significant Park revenue to share with the villagers' projects. Yet the authorities must be aware that these projects must become self-financing as soon as possible or they will be an endless drain on Park revenue, which could otherwise be spent on improving Park management activities.

The Baghmara Community Forest project seems to be one of the most successful eco-tourism schemes in Nepal. The Project's figures show that the gross annual tourist income produced for its first two years (1996 and 1997) is an average of nearly $15,000 a year. However, this excludes administration costs plus salaries for the staff who helped to initiate the project at KMTNC, USAID, WWF Nepal, the Nature Conservancy and the World Resources Institute; KMTNC continues to give technical assistance. If these expenses were subtracted, the scheme would have shown a financial loss for 1996 and

1997. The project may be working, but it is not profitable at this stage, and it must aim to become so.

It is important for conservationists to monitor the various factors responsible for the recent success in rhino conservation in Nepal. Indicators of success need to be developed and regularly tested, along with the cost effectiveness of these factors. Funding must not be cut for those strategies which are known to work in Chitwan and Bardia, such as relatively high Park budgets, the presence of staff in high numbers in the Parks for patrolling, the new anti-poaching units, intelligence networks, conservation education, and motivated staff within co-operating departments. It is alarming to note that the Department of National Parks' budget has been cut by roughly half in US dollars from 1994/5 to 1997/8 in both Chitwan and Bardia National Parks (see Tables 3 and 6). The recent trend of reducing the DNPWC budget of Chitwan and Bardia Parks must be reversed, even if this means decreasing the amount of money going into the buffer zones. It appears that in Nepal funds which go directly into anti-poaching efforts are more effective for rhino conservation than the same amount spent on community development schemes. Community eco-development schemes are important for the long-term survival of the Parks in order to reduce pressure on the Parks' resources, which would otherwise increase with the rising human population. In the short term, it is essential, first and foremost, to continue to manage the Parks effectively and protect the rhinos. If authorities become complacent, allowing financial cutbacks, species and habitat will decline significantly. The Nepalese also hope that the new community development projects will improve rhino conservation further. The next few years will be an exciting opportunity for the authorities and villagers around Chitwan and Bardia National Parks to determine the correct funding balance for both the needs of people and of rhinos.

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12 What strategies are effective for Nepal's rhino conservation: a recent case study

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Abstract

The huge increase in rhino poaching from mid-1998 to mid-2000 in the Chitwan Valley of Nepal was due partly to the slackness and ineffective leadership of one of the chief wardens, and the lack of a full-time experienced and competent senior officer in the valley to supervise the anti-poaching activities. To the credit of the Parks Department, some officers realized what had gone wrong and compiled a report detailing park deficiencies. It was circulated to interested parties at the end of 1999 and early 2000. Unfortunately, by then at least 20 rhinos had been killed illegally in 1998 and 1999. Soon after this report was issued, a highly competent officer was appointed to supervise the anti-poaching activities, and later in the year an experienced and forceful chief warden was put into position. From mid-2000 to early February 2001 only one rhino was poached as far as is known. This incident highlights the importance of a single person or at most two in successful rhino protection.

Introduction

Over the past three decades, the Department of National Parks and Wildlife Conservation (DNPWC) in Nepal has implemented one of the most successful programmes in the world for conserving rhinos (Martin and Vigne 1995). In 1968, there were an estimated 95 greater one-horned rhinos in Nepal, but by 2000, when the most recent census was carried out, numbers had increased to 612 (DNPWC 2000). However, from mid-1998 to mid-2000, Royal Chitwan National Park and the surrounding areas, which harboured 89% of the country's rhinos, experienced the worst poaching for any two-year period since the park was established in 1973. On the other hand, the rhinos in the Royal Bardia National Park have remained secure. Reasons for this sudden increase in illegal killings of rhinos in Royal Chitwan National Park are examined and recommendations

A group of elephant attendants from the Tiger Tops Jungle Lodge enjoy a riverside party inside Chitwan National Park while their elephant enjoys splashing himself with water.

are presented that could reduce the chances of another upsurge in poaching in the future. The fieldwork for this project was carried out in a three-week period in February 2001.

Rhinos poached in the Chitwan Valley, mid-1998 to mid-2000

From 1994 to 1997 the average number of rhinos illegally killed each year in the Chitwan Valley (Royal Chitwan National Park and surrounding areas) was under two a year (Martin 1998). However, poaching began to escalate in mid-1998. From July 1998 to October 1999 at least 19 rhinos were poached in the valley and another 15 were illegally killed from November 1999 to August 2000 (see table 1). These poaching statistics are the minimum figures, as several additional rhino carcasses were found too late to diagnose the cause of death.

Several other sets of poaching data exist. For example, the figure given in the DNPWC annual reports of 1998/1999 and 1999/2000 for the period from July 1998 to October 1999 is 12 (Subba 2000, 2001). Tika Ram Adhikari, who is the team leader of the anti-poaching units in the Chitwan Valley and the acting chief warden of Parsa Wildlife Reserve, believes, however, that there were 19. From November 1999 to July 2000 the figure given in the annual report is 11; Adhikari's count is 13, which is quite close to the official figure. From late 1999 to early 2001, the veterinarians, especially Jacques Flamand of the Wildlife and Domestic Veterinary Programme of Royal Chitwan National

Park, have examined most of the rhino carcasses in and around the park. Judging from the autopsies they performed, they believe that from November 1999 to August 2000 at least 15 rhinos were illegally killed (Flamand 2000), which tallies with Adhikari's counts.

Table 1: Minimum number of rhinos poached in the Chitwan Valley, mid-July 1998 to early 2001

Time period	Number illegally killed
July 1998 to October 1999	19
November 1999 to August 2000	15
September 2000 to early February 2001	1
Total	35
1998 and 1999	20
2000	15
Total	35

Source: Tika Ram Adhikari, acting chief warden, Parsa Wildlife Reserve and team leader for the anti-poaching units in the Chitwan Valley (data collected for 1998 and 1999), and Jacques Flamand, Zoological Society of London, senior veterinary adviser in Chitwan (data collected for 2000 and early 2001)

Using the statistics from the DNPWC annual reports for 1998/1999 and 1999/2000 (Subba 2000, 2001), we can determine that from mid-1998 to July 2000, 55% of the rhinos poached were outside the park. From mid-1999 to July 2000, however, the percentage of rhinos poached outside the park rose to 65. This is significant when we analyse the causes of poaching, because the government organizations responsible for patrolling inside the park are different from those patrolling outside it.

Poaching methods in the Chitwan Valley

Poachers in the Chitwan Valley use six main methods to kill rhinos: shooting with firearms, pit trapping, spearing, snaring, poisoning and electrocuting. During 1999 and 2000, the most common method was with firearms, usually musket or rifle. Some of these arms are locally made, others factory produced. Generally the gangs, which number two to five men armed with three guns, are from outside the park. One or two local people from the buffer zone are recruited as they are familiar with the topography of the park and the surrounding zone. Park staff believe that some former Nepalese army personnel have recently been hired by the gangs, and one soldier retired from the Indian army is involved in the actual shooting. The poaching gangs usually enter the northern park boundary (where most of the rhinos are located) or the surrounding areas in the evenings when the army is not patrolling, and they depart at night or early in the

morning, when they are least likely to be detected.

The gang size for pit trapping is large, as people are needed to construct the big rectangular pits and to cover them with sticks and other vegetation for camouflage; some of these gangs may number up to 15.

Spearing is rather ineffective because often the animal does not die immediately and the authorities find the carcass before the hunters have had a chance to remove the horn, hooves and other body parts. For example, in 1999 one adult male rhino was speared inside the Baghmara Community Forest close to the park, but the wounded animal left the forest and wandered into the elephant breeding centre near the tourist centre of Sauraha, preventing the hunters from taking the valuable horn.

Another method for killing rhinos, which is also not very efficient, is snaring. Most of the snares are put down for deer, but they are occasionally set for rhinos as well. Nylon, rope and wire have been found around the necks and legs of rhinos. Sometimes it takes many days for a snared rhino to die, usually from infection, and by that time, the army or park authorities may have discovered the carcass.

Poisoning has become common. In 1999 more than nine rhinos were poisoned in the Chitwan Valley. The poisons used are chlorinated hydrocarbons of the DDT family, widely used in southern Nepal for crop spraying (Jacques Flamand, pers. comm. 2001). The poisons specifically used for rhinos are put into oranges and pumpkins on the edge of Chitwan Park; they take on average from three to eight hours to kill the animals.

Villagers in southern Nepal have been stringing wire cables (usually two) about one metre above the ground and connecting them to the village power supply to electrocute bears, deer and wild boars. Occasionally rhinos run into the wires. This accidental killing of rhinos by electrocution started in 1997 in Nawalparasi District, and since then at least four rhinos have been killed in this way.

The massive skull of a Greater One – Horned Rhino contrasts sharply to the weight of the animal's horn, which averages 750 grammes (Photo: Lucy Vigne).

The trade in rhino products

When a rhino is illegally killed in the Chitwan Valley, it is usually organized by a trader, who wants the animal primarily for its horn. Sometimes the hooves and occasionally pieces of skin are also removed. But by far the most valuable part of the rhino is the horn. In 2000 a poaching gang in the Chitwan Valley might have received up to 300,000 Nepalese rupees (NPR) or USD 4253 for a horn weighing on average 722 g (Martin 1983), which works out to NPR 415,512 (USD 5894) for 1 kg. The first middleman is usually located in a village in the valley. He sells the horn by weight to another trader (the second middleman),who usually lives in a town such as Kathmandu, Pokhara, Nepalganj or Narayangadh. This trader, who may or may not be an exporter, sells the horn for NPR 90,000-100,000 (USD 1277-1418) per 100 g (T.R. Adhikari, pers. comm. 2001).

In mid-2000, the main buyer of rhino horn in the valley at that time was arrested. He had also organized illegal gangs and sometimes poached himself. He was transporting a rhino horn from Tikauli (just north of Chitwan Park) on a bus to Narayangadh town on his way to Kathmandu to sell it to a main dealer, a Mr. X, for whom he was an accomplice. After his arrest he helped the authorities track down Mr. X, and accompanied park staff to Kathmandu where, with the assistance of the police and the Forest Department, Mr. X was arrested in late July 2000. This was the first time that the authorities caught a major rhino horn dealer. The Kathmandu trader later talked to Tika Ram Adhikari about his dealings. He admitted to selling six rhino horns, but the Park staff believe he sold 11. He sold his horns, at the prices given above, allegedly to a Chinese woman employed in the Chinese embassy in Kathmandu, who is fluent in Nepalese, Tibetan, Mandarin and English. Adhikari thinks she has been exporting horns since 1990. Besides these horns, she also allegedly buys tiger bones and other medicinal products and sends them by road, first to the border town of Tatopani, then on to Lhasa in Tibet, and finally to China.

Mr. X, formerly a managing director of a charcoal company, is a businessman from the Manange ethnic group. Originating north of Annapurna, this group has a recent tradition of organizing dubious schemes with businessmen in Singapore, Bangkok and Hong Kong to import gold, clothes and electronic goods. He started buying horn around 1990, mostly from his Chitwan Valley accomplice mentioned earlier. He is prosperous and presents himself as benevolent by helping flood victims and donating to monasteries. He is now in Bharatpur Prison with five major counts against him (Gopal Prasad Upadhyay, chief warden of Royal Chitwan National Park, and Dhruba Acharya, DFO Kathmandu, pers. comm. 2001). Besides Mr. X and the Chinese woman, who buys horns from him, three other known main dealers in rhino horn are based or partly based in Kathmandu. One is a Tibetan who buys rhino horns, tiger bones, rare herbs and gemstones in Nepal.

He speaks only Tibetan so he works closely with the multilingual Chinese woman in exporting rhino horns from Nepal to Lhasa and beyond. Especially from 1991 to 1994, another Manange, who is a former British Gurkha officer, was involved in buying rhino horns and is still active today. The third, also a Manange, is a relative of Mr. X, with whom he works. He is a proprietor of a guest house in Kathmandu, and he buys rhino horns and tiger bones.

Reasons for the increase in poaching in the Chitwan Valley from mid-1998 to mid-2000

There was no single cause for the major increase in rhino poaching in the Chitwan Valley from 1998 to 2000, but one factor was overriding: mismanagement. First, in the middle and late 1990s, there were four transfers of chief wardens in Chitwan Park involving three people. The continuity of management suffers from rapid changeover such as this.

Second, one of the chief wardens was not effective enough, as he sometimes procrastinated in making decisions. In addition, he did not coordinate well the activities of the five groups of people responsible for protecting the rhino. These groups are the regular staff of 277, the army, the rhino anti-poaching units, the DFOs (district forest officers) and the non-governmental organizations (NGOs). He did not communicate adequately with the commander of the army stationed inside the park. (Most of the rhino anti-poaching activities in Chitwan Park are carried out by an army battalion of about 800 men who are well armed; none of the park staff carries firearms.) Nor did he deal well with his anti-poaching units, five of which are based inside the park, two in Parsa Wildlife Reserve and three in the surrounding national forests located in the buffer zone. This chief warden did not have close relations with DFOs in Chitwan, Nawalparasi or Makwanpur Districts, where the rhino are found. This lack of strong coordination with these DFOs was especially regrettable as over half the rhinos poached in 1998, 1999 and 2000 were killed in these districts. Neither did this chief warden cooperate closely enough with the NGO community such as WWF Nepal, which helps support the anti-poaching units; the King Mahendra Trust, which carries out training programmes and supports research projects; and the International Trust for Nature Conservation (ITNC), which provides most of the reward money for helping to arrest poachers and traders. Previous chief wardens, who had kept poaching at low levels (except in 1992), all had excellent, strong working relations with all these organizations. The chief warden's role in coordinating all the groups involved in rhino protection is essential for successful rhino conservation.

A third factor contributing to the mismanagement was that the anti-poaching units were not as active as they should have been as they were not well supervised by one of

the chief wardens. The result was that they were not as mobile as they should have been and did not patrol intensively enough.

Another main reason for a rise in rhino poaching was financial difficulties. The anti-poaching units and Chitwan Park's other personnel lacked adequate resources. The senior staff of DNPWC, aware of these problems, issued a report in December 1999 stating: 'APU staff are not well equipped. The informants are not adequate in number. Anti-poaching units are very weak because [of] lack of effective intelligence system, field gear, proper training, supervision, guidance, coordination, transportation and weapons...' (Adhikari et al. 1999). The report also confirmed that 'joint patrolling of APU's staff and armed forest guards has not been developed in the Chitwan Valley due to lack of proper coordination mechanism between the park warden and DFOs' (Adhikari et al. 1999).

A further cause of the poaching was that the main buyer of rhino horn in the valley in the late 1990s was not arrested until mid-2000. The main trader in Kathmandu, Mr. X, continued buying rhino horn until his arrest in late July 2000.

Also, from 1996 to around 2000, perhaps 60% of the rhino poachers were supported by political party leaders, making it more difficult to apprehend and jail them.

A final cause for more poaching in the late 1990s, as DNPWC director general Tirtha Maskey and others believe is that because of a surplus of rhinos in certain northern areas of the park there has not only been more infighting among males, sometimes resulting in death, but also some have wandered out of the park making it easier for hunters to poach them.

Finally in late 2000, a former chief warden, Gopal Prasad Upadhyay, who was well respected and a good leader, was moved back into the position of chief warden of the park. In the same year, the former assistant warden, Tika Ram Adhikari, who was in charge of anti-poaching activities in and around Chitwan Park, returned, this time as team leader of the anti-poaching units of the Chitwan Valley.

Decline in poaching in the Chitwan Valley from mid-2000

With the reappointments of Upadhyay as chief warden and Adhikari as the anti-poaching team leader, rhino poaching in the valley ceased almost totally from August 2000 to early February 2001, when these data were collected. The last known rhino-poaching incident occurred outside the park, when a rhino wounded by a bullet took three months before it finally succumbed and died in the national forest in November 2000.

Since the major threat to rhinos was outside the park, where the army has no jurisdiction, a major effort was put into reinvigorating the anti-poaching units working there.

Adhikari showed strong leadership and personally spent 10 days each month in the field supervising anti-poaching strategies. To complement the anti-poaching units, which do not possess guns, 54 armed forest guards with .303 rifles were employed from around December 1999 to patrol the areas outside the park. One four-wheel-drive vehicle and one motorbike were obtained to improve logistics.

Perhaps the most important component of any successful anti-poaching campaign is intelligence, which was greatly improved. Besides the intelligence officers attached to the anti-poaching units, the user committees that help run the 750-km^2 buffer zone on the edge of Chitwan Park provided five informers. Thus the total number of informers in and around the park is now 17, 6 paid by ITNC, 6 by WWF Nepal and 5 by the user committees. ITNC, which raises funds from tourists at Tiger Tops Jungle Lodge, continued to allocate considerable sums of reward money. It donated NPR 295,000 (USD 4184) of reward money in 2000 to the chief warden, which led to the arrest of many poachers in the Chitwan Valley (Marcus Cotton, general manager, Tiger Tops Jungle Lodge, Chitwan, pers. comm. 2001). From January 2000 to early February 2001, 28 rhino poachers, 4 leopard poachers (the bones are sold for only USD 14/kg) and 4 people in possession of fake rhino horns (made from wood) were arrested (Adhikari, pers. comm. 2001). A man was also arrested for creeping around the park in the early mornings photographing rhinos, presumably to identify those with the largest horns for the poaching gangs.

To improve further the coordination of those involved in anti-poaching, monthly meetings were set up with the army, the Forest Department, the Parks Department and the police. This greater cooperation increased the efficiency of conserving the rhinos. In addition, the political support that the poaching gangs and traders used to get from some of the political parties has now decreased. Senior park staff have convinced the politicians that this former policy was not in their interest.

Excellent protection of rhinos in Royal Bardia National Park

Between 1994 and 2000 not one rhino was illegally killed inside Royal Bardia National Park, although two were poached outside it – one in 1998 and one in November 2000 in the buffer zone, the last known rhino to be illegally killed. Using a home-made gun, the poacher fired a bullet into the rhino; however, the animal did not die instantly but first travelled several kilometres. When it died and the four poachers in the gang started to chop off the horn with an axe, they were discovered by several villagers, who reported the incident to the park authorities. Army and park staff immediately went to the site and were able to collect the full horn as the poachers had fled.

Table 2: Number of rhinos in Nepal, April 2000 census and 1994 count

Location	April 2000 census	1994 count
Chitwan Valley*		
Inside park	492	411
In buffer zone	52	29
Total	544	440
Royal Bardia National Park	67	-
Royal Suklaphanta Wildlife Reserve	1	-
Total for Nepal	612	-

Source: DNPWC 2000

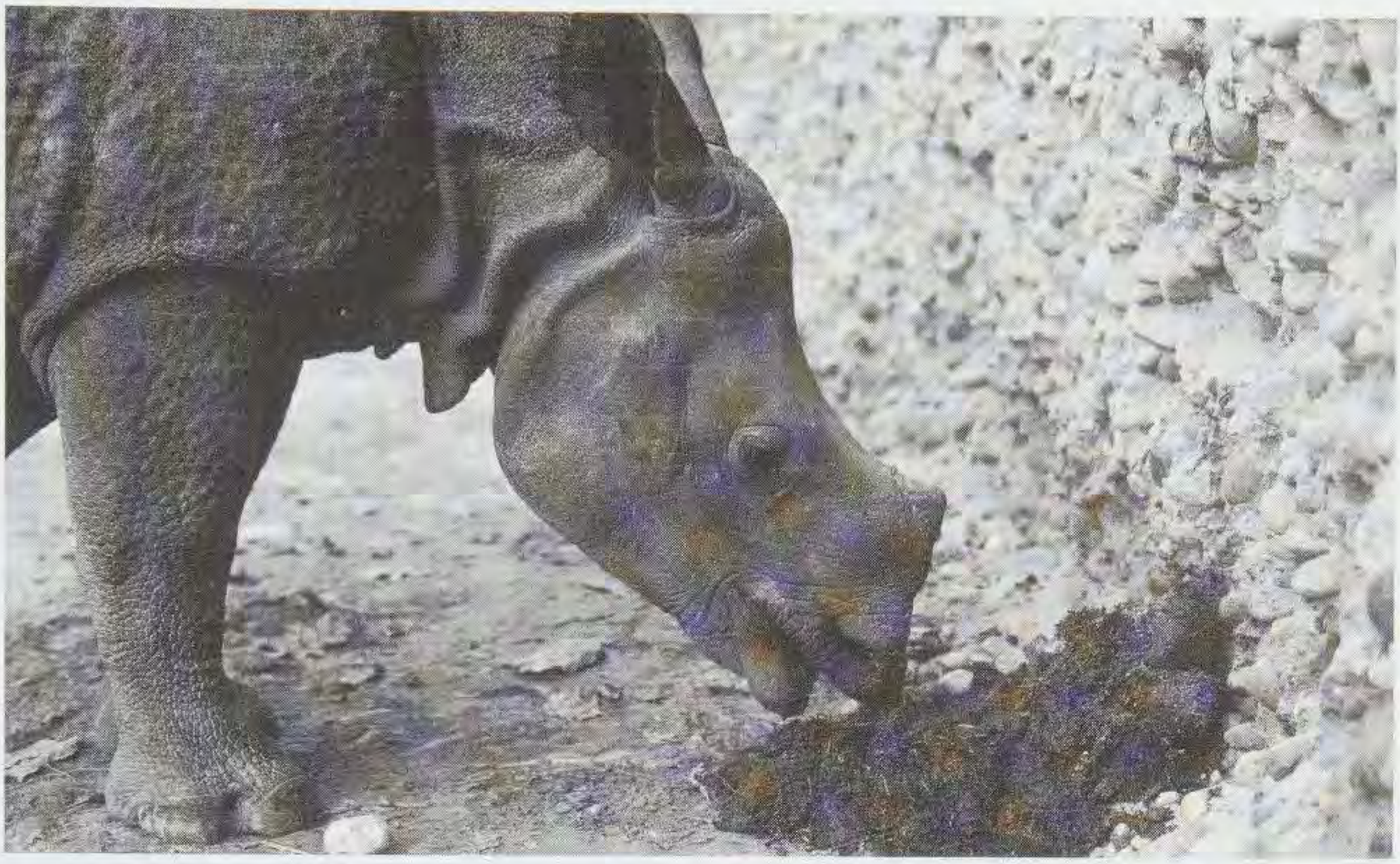
**Growth rate of the Chitwan Valley population from 1994 to 2000: 3.88% per annum*

From 1994 to 2000, hunters have been unsuccessful at poaching rhinos in Bardia Park, compared with Chitwan Park, for several reasons. There are fewer rhinos in Bardia; in the year 2000 there were 67 rhinos in the 968 km^2 of Bardia Park compared with 492 rhinos in Chitwan, which is approximately the same size (see table 2). Most of the Bardia rhinos are located in the Babai Valley, a remote and inaccessible part of the park, whereas in Chitwan they are usually found along the river close to human habitation. In addition, far fewer people live around Bardia (70,000) than Chitwan (about 242,000 in the buffer zone alone) according to DNPWC (1999). Rhinos have been in the Chitwan Valley for thousands of years but were eliminated in the Bardia area many decades ago and were not brought back until the translocations from Chitwan commenced in 1986 (13 rhinos in 1986, 25 in 1991, 4 in 1999 and 16 in 2000). Thus, there is no long tradition of rhino poachers and middlemen around Bardia. From 1986 to 1993, eight rhinos have been poached, six in and two outside the park.

Before the buffer zone was set up around Bardia in 1997, the forests outside the park were fairly large compared with those surrounding Chitwan, and they offered the local people ample supplies of wood, thatch and other materials, and adequate grazing for their livestock. Thus, the incentive to enter Bardia Park to hunt for a small, isolated population of rhinos for economic gain was slight.

Perhaps the most important factor for the recent reduction of rhino poaching in and around Bardia Park is because a well-thought-out rhino anti-poaching strategy has been implemented and managed. There are five anti-poaching units which patrol inside the park and each unit employs one informer who moves around the villages outside the park gathering information on possible poachers and middlemen.

Other informers are also working in the villages, gathering information for Bardia's chief warden. In 2000, for example, 11 rhino poachers were apprehended because of information that informers supplied. One of the poachers admitted that between 1991



It is not unusual to this see rhinos in Chitwan National Park eating dung.

and 1993 he shot several rhinos with a home-made gun and sold the horns for NPR 100,000 to 200,000 (the equivalent of USD 3144 to 6287/kg) to a trader from Nepalganj town (Shiv Raj Bhatta, manager of the Bardia Integrated Conservation Project, pers. comm. 2001). The actual poaching gang consisted of about six people who came from Taratal village outside the buffer zone to the south of the park.

The Bardia anti-poaching units are well trained, disciplined and effectively led. WWF Nepal has provided them with communication sets, transport facilities and other equipment such as camping gear. The informers have also received financial reward from ITNC. All these extra benefits from the NGOs have notably increased the motivation of the men in these units, which in turn has greatly increased their effectiveness.

As a further incentive to improve the efficiency of the guard posts inside Bardia, each month one or more guards receives a reward of NPR 1000 (USD 13.80) in early 2001 for outstanding service. A third factor of the anti-poaching strategy is the method of patrolling. Park authorities have developed what they call 'sweeping operations'. When they are notified by their informers that there may be a poaching gang in a certain area and there is insufficient manpower in that place, the park staff and the army unite and carry out a joint patrolling exercise, sometimes with elephants. Park officials have shown that these sweeping operations, which often last for days in critical areas, have greatly deterred poachers and those engaging, in other illegal activities, such as collecting firewood, smuggling timber and grazing livestock illegally (see table 3).

The strong cooperation between the park and its partners - the Royal Nepali Army, DFOs, the Buffer Zone Development Council, and NGOs - over the past few years has greatly reduced poaching in and around Bardia Park. This strong cooperation is probably the most important single component of Bardia's anti-poaching strategy for rhinos, followed closely by the effectiveness of the informers.

Table 3: Illegal activities carried out in Royal Bardia National Park, 1998 and 1999

Case	1998		1999	
	Incidents (no.)	Offenders (no.)	Incidents (no.)	Offenders (no.)
Animal poaching	6	8	1	1
Firewood collection	11	195	16	295
Timber smuggling	3	9	1	10
Grass cutting	13	71	9	134
Fishing	6	67	3	22
Fish poisoning	1	8	-	-
Mushroom collection	2	12	2	43
Fern collection	3	24	-	-
Illegal entry	1	7	1	21
Illegal cattle grazing	-	-	-	512

Source: Bhatta and Subba (2000 p.4, 8)

- no data

The importance of adequate budgets

Chitwan Park earned USD 746,926 in the financial year of 1999/2000 (see table 4), 97% of this coming from tourist activities, but all this has to be given to the central government. In turn the central government gives DNPWC a budget for Nepal's parks, and from this Chitwan Park was allocated USD 146,971 in the financial year of 1999/2000 (see table 5). This is less than 20% of what the park earned and is not enough to operate the park adequately. The budget of Chitwan Park (excluding the army) was cut from USD 219,488 in 1994/95 to USD 146,971 in 1999/2000 because the funds supplied by the Central government to DNPWC were reduced. The budget for Bardia Park (excluding the army) has also significantly declined from 1994/1995 (see table 5). For the first time in the park's history, however, revenue in 1999/2000 exceeded Bardia's budget (except for the cost of the army) because of the sharp increase in tourist numbers (see table 6). DNPWC officials report that they need more government money to ensure a bright future for the rhinos.

Table 4: Revenue raised in Royal Chitwan and Royal Bardia National Parks for 1997/1998 to 1999/2000

Year	Royal Chitwan National Park		Royal Bardia National Park	
	Nepalese rupees	US dollars	Nepalese rupees	US dollars
1997/1998	48,150,192	801,969	2,669,277	44,193
1998/1999	54,543,777	814,086	4,226,068	63,076
1999/2000	51,537,864	746,926	7,615,768	110,373

Source: Subba (2000 p.14, 2001 p.18)

Table 5: Department of National Parks and Wildlife Conservation budgets for Royal Chitwan and Royal Bardia National Parks, 1994/1995 to 1999/2000

	Royal Chitwan National Park	
Year	Nepalese rupees	US dollars
1994/1995	10,893,200	219,488
1998/1999	8,197,000	122,343
1999/2000	10,141,000	146,971
	Royal Bardia National Park	
1995/1996	16,634,000	312,669
1998/1999	6,389,000	95,358
1999/2000	6,770,000	98,116

Source: Subba (2000 p.3, 2001 p.27)

Table 6: Number of tourists visiting Royal Chitwan and Royal Bardia National Parks, 1997/1998 to 1999/2000

Year	Royal Chitwan National Park	Royal Bardia National Park
1997/1998	104,046	?
1998/1999	105,884	5,864
1999/2000	117,512	9,610

Source: Royal Chitwan and Royal Bardia National Parks, unpublished statistics

Conclusions

The anti-poaching strategies that DNPWC has developed for the Chitwan Valley and the Bardia area are excellent, but they are complicated and definitely require superior management skills if they are to be implemented successfully. DNPWC does have a few officers who are capable of putting into action such strategies. Its director general

must ensure that such officers are always in place, as these parks contain one of the most endangered large animals in the world, the greater one-horned rhino.

For the successful conservation of the rhino to continue in Nepal, more financial resources need to be allocated in keeping with the large sums of money raised from tourists who come to see the rhinos. The DNPWC director general is aware of the importance of greater funding for Bardia and Chitwan. He also realizes the value of informers and reward money. Most of this money comes from NGOs, and DNPWC Director General Maskey acknowledges that there is no long-term guarantee that the NGOs will continue to pay money to informers and for rewards at the levels required. To partially remedy this situation, he has proposed that a trust fund be established with considerable sums of money to help support Nepal's parks (T. Maskey, pers. comm. 2001).

The demand by some North American zoos is for at least six pairs of rhinos from the wild populations of the Indian subcontinent. For political reasons, India is unlikely to allow the export of live rhinos in the near future. Since one breeding pair of greater one-horned rhinos is worth to certain zoos a minimum price of USD 250,000 to 300,000, perhaps the Nepal government might consider selling several pairs of their rhinos from those areas of Chitwan Park where there is a surplus. This money could then be put into the trust fund to ensure that the remaining rhinos are well protected from poachers. This proposal is a controversial one, but Nepali officials should not be deterred from considering it. There is also a precedent for such a sale; the government of Nepal, as well as having donated live rhinos as state gifts, has sold some to various foreign institutions, such as the pair sold to the Singapore Zoological Gardens for USD 250,000 in 1987 (Bernard Harrison, executive director of Singapore Zoological Gardens, pers. comm. 1990). Between 1980 and 1997, 25 live rhinos were sent from Nepal to various countries including 4 to India, 4 to the USA, and 3 to Germany (Suwal and Shakya 2000).

There is also another precedent, in a different part of the world, for the commercial sale of rhinos by a government department. The KwaZulu-Natal authorities in South Africa have been selling live black and white rhinos for years. In their auction held in 2000, six black rhinos were sold for a total of USD 330,000 and 43 white rhinos for USD 1,230,000 (Emslie 2000).

Money plus good leadership and efficient management by senior personnel are going to continue to be the two key factors for the success of rhino conservation in Nepal.

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13 Nepal

(*The South and South East Asian Ivory Markets,* published by Save the Elephants Nairobi and London, 2002)
EBM and Daniel Stiles

The legal position of the ivory trade in Nepal

Nepal acceded to CITES on 16 September 1975, one of the first countries to do so. The internal trade in ivory is illegal as the National Parks and Wildlife Conservation Act of 1973 prohibits the sale and even the display of elephant ivory without a permit. According to the present Director General of the Department of National Parks and Wildlife Conservation (DNPWC), Tirtha Maskey, and his predecessor, Uday Sharma, no such permit has ever been given (pers. comm., 1998).

The DNPWC is responsible for implementing the domestic ban inside parks and reserves and the Department of Forests is responsible for everywhere else, but it does not have a specific law enforcement unit (Heinen et al., 1995; Maskey, 1998a and b; and Pringle et al., 1999). The Forest Department has the authority to check the curio shops for endangered wildlife products with the police (Maskey, pers. comm., 1998). The District Forest Officer (DFO) Kathmandu, Dhruba Acharya, confirmed that he had the authority to inspect the shops, but has not done so because the Forest Department, according to him, has not received any report that ivory products are being sold. When the investigator (E.M.) told him that many shops in Kathmandu displayed ivory, he appeared surprised. Furthermore, the DFO acknowledged that he did not have the staff to inspect the souvenir outlets, nor an intelligence network to find out what was going on, nor money to pay for rewards leading to the arrest of wildlife offenders. If he heard that there were endangered live animals or products for sale, the fact that he would have to work with the police in a joint operation would mean extensive organization and planning (Acharya, pers. comm., 2001).

The Forest Department in Kathmandu, in co-operation with the police, has arrested and prosecuted people illegally possessing or selling leopard bones, pangolin skins, musk pods, fake rhino horns, bear bile, tiger skins and a few other products. There was not a single arrest, however, for possession of elephant ivory between the fiscal years of 1997/8 and 1999/2000 (see Table 1). Most of these products were discovered by the police, not the Forest Department, in vehicles at road blocks near Kathmandu. Due to growing disturbance by the Maoists (a rebel group trying to overthrow the government by force),

the police have been more vigilant since 1997 in checking vehicles for firearms and in the process have found wildlife products.

Table 1: Cases of wildlife offences filed at the District Forest Office, Kathmandu for 1997/8-1999/2000

Fiscal year	Items confiscated per year	Quantity	No. of people involved
1997/8	Leopard skin	2	2
	Leopard skull	1	2
	Rhino bone	1	2
1998/9	Bear bile	1	1
	Deer	1	1
	Eagle, live	13	1
	Leopard skin	6	6
	Rhino bone	1	1
	Rhino horn, fake	2	6
	Tiger skin	1	1
1999/2000	Bear bile	24	4
	Leopard bone	?	4
	Leopard skin	1	3
	Musk pod from Musk deer	15	6
	Musk deer tooth	2	5
	Pangolin skin	3	1
	Rhino horn	1	1
	Rhino skin and dried meat	?	1
	Tiger tooth	4	1
	Tortoise carapace	24	1

Source: DFO, Kathmandu, pers. comm., 2001

Most Kathmandu shopkeepers are aware that it is illegal to take ivory items out of the country and to bring them into nearly every other country (to sell or otherwise). Some state incorrectly that tourists are allowed to take out small amounts for personal use or export old pieces that pre-date the CITES Convention without a permit. One prominent

shop owner has even gone to the extent of telling his customers that his Chinese-carved elephant ivory pieces are actually made from Siberian mammoth tusks which are legal on the domestic and international markets.

Introduction to Nepal

Fortunately for comparative purposes, an earlier survey of the retail shops in Kathmandu selling ivory items was carried out in February 1998 (Martin, 1998). In addition to this first survey of the retail trade in ivory, one of the investigators (E.M.) interviewed the ivory carvers in Nepal in 1982 and 1991 so some previous data are available on the ivory trade of the country.

Field-work for this study was carried out in Nepal from 3 to 23 February 2001. Ivory carving in the town of Patan close to Kathmandu was investigated along with the shops selling ivory items in Kathmandu (500,000 inhabitants). Work was also carried out in the Chitwan Valley in the southern part of the country from where tusks have traditionally come, and in Royal Bardia National Park in the west where a little trade in raw ivory has recently occurred for the Kathmandu market. There are very few elephants in Nepal: 70

In the early 1980s when handlers of domesticated elephants sawed off the tusks, they sold them to ivory craftsmen in Patan. In addition to this ivory source, the craftsmen purchased ivory from India.

wild (mostly in Royal Bardia National Park) and perhaps up to 90 domesticated ones in early 2001, according to DNPWC officials.

Nepalese have been carving ivory for at least 400 years and some historians believe that this art form may have started in the country in the 8th century (St. Aubyn, 1987). In the National Museum in Nepal, one of the investigators (E.M.) in 1982 saw one ivory statue of Bringi Rishi (13 x 24 cm) which according to the Museum staff and the Museum guide book dates from the 16th century (Dwivedi, 1975). South of Kathmandu in the Patan Museum is a magnificently carved ivory handled mirror which was made in 1733, also in Nepal.

During the Rana dynasty which ruled Nepal from 1846 to 1951, ivory craftsmen produced many attractive items from elephant tusks: boxes, picture frames, prayer wheels, buttons, pins, cufflinks, necklaces, sculptures of gods and goddesses, combs, pieces for the traditional game pasa, handles for kukris (Nepalese knives), ear picks, carved tusks, windows and ornamental temples. Most of these were made for members of the Rana family and other wealthy and influential Nepalese. Few items were exported wholesale except for some prayer wheels and pasa games which were sent to Tibet, according to a main ivory carver (pers. comm., 1982). Occasionally, ivory works of art were commissioned by the government to give as presents to foreign dignitaries. For example, before the visit of Queen Elizabeth II in 1961, a well-known carving family in Patan was commissioned to carve a 2.5 m tusk which came from a Nepalese elephant. It took a master craftsman an entire year to complete the intricate carving (master carver, pers. comm., 2001).

There were never more than 30 families involved in the crafting of raw tusks during the first half of the 20th century and most of them lived in Patan. Many were Buddhists, not from the majority Hindu population in Nepal. They came from a traditional caste of artisans who had been carving ivory for generations and speak the Newari language. There were few other ivory carvers outside the Kathmandu Valley.

After the collapse of the Rana dynasty in 1951 and subsequent political upheavals, the ivory business declined due to lack of commissions from the Ranas and other previously influential families. By the early 1960s there were only four families left crafting ivory. The other families had switched to wood carving as the demand by the Nepalese was higher and wood was easier to obtain. Beginning in the 1960s, foreign tourists for the first time were allowed easy access to the country, and with the sharp increase in their numbers from 6,179 in 1962 to 175,448 in 1982 (Shrestha, 2000), the demand for ivory items expanded considerably to meet growing sales to the tourists, according to the shopkeepers.

Sources and prices of raw ivory in Nepal

When the investigator first studied Nepal's ivory trade in 1982, traders obtained their raw ivory from the owners or handlers of domesticated elephants in Nepal who organized the cutting of the tusks from their elephants, and from other traders who imported raw ivory from India. A few tusks came from old stocks held by the Rana family who sold them in order to earn money. Some Ranas and other wealthy Nepalis had gone on sport hunting trips to Africa and had shot elephants. When they needed money, some of them sold their trophy tusks as well. The main ivory carvers claim that they only bought or were commissioned to carve raw ivory from Nepal or India, not realizing they were also given some ivory tusks from Africa to carve. In 1982, high quality raw tusks were sold to the shop owners or craftsmen for USD 92-115/kg (see Table 2), while broken or badly damaged tusks were bought for only USD 38-46/kg (ivory carving family in Patan, pers. comm., 1982, and see Table 3).

Table 2: Prices per kg for high quality raw ivory in the Kathmandu area for various years

Year	NRs price	USD price
1979	644	58
1982	1,200-1,500	92-115
1991	8,000	187
1998	15,000	242
2001	12,000-15,000	166-207

Table 3: Prices per kg for poor quality (broken or damaged) raw ivory in the Kathmandu area for various years

Year	NRs price	USD price
1982	500-600	38-46
1998	5,000	81
2001	5,000	69

Members of the Rana family and other wealthy influential people still occasionally sell tusks to traders, as they have been doing for decades, but the quantity sold is small. In Nepal there are an estimated 90 domesticated elephants, but no recent survey of their numbers has been carried out. Some of these elephants are privately owned, with many of them working in the tourist industry. Tusks are occasionally obtained when these elephants die, but more frequently from cutting off their tips, as they have done for decades. Every few years the tusks of the adult males are pruned. For example, at

the Tiger Tops Jungle Lodge and the associated "Tharu Village" where tourists also stay, there were 15 domesticated elephants in early 2001 of which three were tuskers. Every three or four years about 8 cm of each of their tusks are cut off by hand saw. Tiger Tops keeps these pieces, but some of the other owners of domesticated elephants sell them. Almost all the domesticated elephants live in the Terai in the southern part of the country, and the tips are transported northwards for sale in the Kathmandu area. According to wildlife traders and ivory craftsmen, there is no evidence of these tips being exported.

Wild elephants are very rarely killed illegally in Nepal. There are several reasons. There are few wild elephants (about 70) mostly in Royal Bardia National Park and they are difficult to locate. Local Nepalese think also that they are hard to kill as they are so large. Furthermore, potential poachers around Bardia do not have contacts with ivory dealers nor are they familiar with prices as most of these elephants have only migrated from India in the past decade (mostly due to harassment).

Tusks are obtained from wild elephants which have died of natural causes. In mid-2000 a man south of Bardia was arrested by government authorities for possession of a 15 kg tusk which had come from a large wild male elephant known as Kancha which had recently died. The poacher was inside the Park hunting rhinos in the remote Babai Valley when he came across the tusk. The man was planning to sell the tusk to a trader (who came from Gularia District south of the Park near the Indian border) for the low price of 1,000 Nepalese rupees or NRs (USD 13.84)/kg, less than one tenth of what it could be sold for to an ivory carver in the Kathmandu area. This shows that the person who found the tusk had little idea of the value of ivory. The potential buyer was also arrested, but he refused to tell to whom he was going to sell the tusk nor at what price (Shiv Raj Bhatta, Project Manager, Bardia Integrated Conservation Project, pers. comm., 2001).

Another source is still from imports from neighbouring India. There is a long tradition of Indian traders supplying tusks to Nepal because of the scarcity of elephants in Nepal. Most of the tusks supplied by India are from elephants which either died in north or north-east India from natural causes or were poached or were cut from domesticated animals. Traders in Delhi and Rajasthan who have been exporting worked ivory to Nepal appear to be the main suppliers of tusks for Nepal. In 2000, the price for Indian raw ivory to a trader taking it from India to Nepal was around 10,000 Indian rupees (USD 222)/kg for good quality tusks over 5 kg in weight and from 5,000 Indian rupees (USD 111) to 8,000 Indian rupees (USD 178)/kg for tusks of smaller size and inferior in quality (anonymous sources, Delhi, pers. comm., 2001).

Nepal is one of the main outlets for other Indian wildlife products as well, such as cat skins, tiger bones, musk and bear bladders (Bauer, 1995; and Heinen and Leisure, 1993). Thus, there is a well organized network of traders sending illegal wildlife products from India to merchants in Nepal, especially to Kathmandu.

The price of good quality raw tusks from whatever source as offered by a trader to a shop owner or carver in the Kathmandu area was USD 187/kg in early 2001. This is a decline from 1998 when it was USD 242/kg, an all time high, implying a decrease in demand.

Ivory workshops in Nepal

In 1982, when the investigator first interviewed the ivory carving family in Patan, there were eight people (all males) working in ivory using only hand tools in one house. The main objects carved were: a 22 cm prayer wheel taking one week to make and priced wholesale at NRs 3,000 (USD 229); a 5 cm Buddha taking three days and wholesaling for NRs 400 (USD 30); a 17 cm Buddha requiring five days and wholesaling at NRs 1,500 (USD 115); a 42 cm kukri taking a month to carve and selling wholesale for NRs 8,000 (USD 611); and an 8 cm ear pick taking two hours to make and priced wholesale at NRs 65 (USD 5). The most common of these items were the prayer wheels and the Buddha sculptures. Occasionally, one of the family members would carve an outstanding piece. For example, in 1980 a shopkeeper in Patan gave a tusk to one of the master carvers to produce an intricately carved 15 cm Hindu god. The carver earned in labour NRs 8,000 (USD 721) for almost three months' work. The shopkeeper then sub-contracted the painting of the sculpture to an artist which cost him NRs 4,000 (USD 360). The shopkeeper then attempted to sell it retail for NRs 25,000 (USD 2,252). He actually sold it to an American visitor for NRs 22,000 (USD 1,982). In 1982, the same carver said that he had spent seven months producing another outstanding piece (in 1975), an intricately carved

In 1982, Nepalese craftsmen paid between US $92 and US $115 for a kilo of good quality ivory.

ornamental window (35 x 30 cm). He received NRs 6,000 (USD 1,534 at that time) for his labour which worked out at about USD 218 a month. The shopkeeper, who had provided the piece of tusk, offered the finished window for retail sale at NR 50,000 (USD 4,766). Usually the craftsmen earned in 1982 on average USD 70 a month. These earnings were above the average of most skilled workers in the Kathmandu area.

This carving family, in 1982, sold its finished ivory pieces to 15-20 different shops in Kathmandu, Patan and Bhaktapur (just east of Kathmandu). None was exported wholesale, but most of the buyers in the shops were foreigners so the pieces did end up going abroad.

By the time the investigator revisited this carving family in 1991, some aspects of the business had changed drastically. Only three family members were still working in ivory due to the difficulties in obtaining raw tusks. The other carving members of the family had switched to working different raw materials, including wood, domestic water buffalo bone and yak bone. They claimed that more money could be earned working these other materials than ivory.

The price of high quality raw ivory in 1991 had soared to USD 187/kg, an almost 100% increase in US dollars from 1982 and about a six-fold increase in Nepalese rupees on account of the difficulties in obtaining it. Most of the tusks offered to the Patan carving family came from the Chitwan Valley, especially from Bharatpur just north of Royal Chitwan National Park. In 1990 the family bought 10 kg of raw ivory, mostly small pieces of less than 1kg, and were provided with a few pieces by shop owners. From this supply they carved 10-15 small figurines and 15-20 prayer wheels. They also made five 25 cm phurpas (magic darts used in Buddhist rituals to slay an enemy) which took about two months to carve each and were sold to shop owners for NRs 20,000 (USD 648) each.

By 1998 there was only one person in the main carving family in Patan using ivory although a second family member would carve ivory if available. He claimed there were no others left carving ivory in the Kathmandu area. The price of good quality raw ivory rose in 1998 to a record NRs 15,000 (USD 242)/kg. The family claimed at the time that raw ivory was in very short supply, and the traders and shop owners who used to bring them the pieces of tusks no longer did. The main carver said he only worked part time in ivory due to this scarcity. Thus the other craftsmen in the family were using yak bone (a 12 cm piece cost USD 0.73), buffalo bone (a 12 cm piece cost USD 1.29) or wood. In 1998, one small ivory Ganesh (the Hindu elephant headed god of wisdom and success) was being carved using 11 different tools. The carver was earning NRs 200 (USD 3.23) for labour a day for this commission, the same for carving other materials. Compared

to 1982, the ivory master carver was earning less in 1998 and was now on a par with a skilled worker such as a carpenter. He partly blamed the shopkeepers who would not pay higher prices for the ivory objects. They in turn claimed that the demand by 1998 for new ivory items had declined drastically on account of the international ivory bans which had come into force in 1990. The ongoing import of worked ivory pieces from China, India and Tibet, in that order, making up 46% of all the items for retail sale in Kathmandu in 1998 (see Table 4), also kept prices from Nepalese-made ivory items relatively low due to the continuing foreign competition.

Table 4: Country of origin for ivory items for retail sale in Kathmandu in early 2001

Country	Percentage of total	
Nepal	38%	(53% in 1998)
China	33%	(29% in 1998)
India	22%	(13% in 1998)
Tibet	6%	(4% in 1998)
Japan, Europe and Hong Kong	1%	(1% in 1998)

By the late 1990s an artistic tradition that had been practised for hundreds of years in Nepal - ivory carving - had almost completely stopped. The member of the main ivory carving family in Patan who was still working part time in ivory realized that there was no future in ivory and had not even trained his son in the art.

The ivory carving business in the Kathmandu area has continued to decline mostly due to the lack of demand by shopkeepers for new Nepalese items. In total, there may be only four ivory carvers left in the Kathmandu area who are all in the one family (in two separate houses in Patan), according to the master carver, but they all only work part time. The investigator met the two main carvers who were both working ivory in February 2001. The master carver was carving a 350 g piece of tusk into the Hindu god Krishna (god of love, power and strength), first using an electric tool and then using hand tools to complete it. He required 15 days of continuous work to carve such a piece. He planned to sell the sculpture to a shopkeeper for as much as NRs 50,000 (USD 693). The other carver was working on a 22 cm tusk weighing 600 g. He was carving Hindu gods onto it and planned to work a month (eight hours a day, six days a week) to complete it. He expected to sell it to a shopkeeper for at least NRs 90,000 (USD 1,247). He had only worked on one other piece of ivory in the past three years and hoped to make a good profit on the carved tusk. The carvers in Nepal generally are not paid for their ivory items in full until the shopkeepers sell the pieces.

The family mostly crafts water buffalo bone which costs a fraction of elephant ivory and is readily available. This raw buffalo bone (harder than elephant ivory) is sold by the piece and 1 kg costs only NRs 40 (USD 0.55). Sometimes they work with yak bones. Elephant bone is not used because it is full of small holes and is too soft. Rhino bone, however, is suitable but rarely carved.

Bone carvings, being cheaper, are easier to sell. In comparison, the carvers may have to wait up to one year to sell a single ivory piece. They put a very high price on their ivory items making them even harder to sell. The carvers further lamented that imported ivory carvings made quickly by electric drills and other power-driven tools were cheaper than Nepalese ones. As a result, when the Nepalese items are sold, the shopkeepers are replacing them with cheaper imported ivory items for which the demand is greater. From 1998 to 2001 the percentage of ivory items made in Nepal offered for retail sale in Kathmandu declined from 53% to 38% (see Table 4). The ivory carving family believes that all ivory carving will cease in Nepal within ten years and thus members of the family are not training any of their relatives to work in ivory.

Retail outlets and prices for worked ivory in Nepal

The main souvenir and jewellery shops were in Lal Durbar, New Road, Thamel, Durbar Marg, the main tourist hotels and in a few other areas of the city. These were surveyed in February 2001. One of the investigators' (E.M.)1998 survey was carried out in the same areas so nearly all the retail outlets visited then were re-examined three years later in order to find out how many ivory pieces were available for sale, the type, the prices, and from what country they were made. Thus, an accurate comparison between 1998 and 2001 was made.

There are at least 200 curio and jewellery shops in the city, and ivory items were found in 57 of them. This compares with 71 out of 184 for 1998. Although there were fewer shops with ivory in 2001, there were slightly more ivory items in total for sale, 1,546 versus 1,454 (see Table 5). Four shops only had one ivory item each while the shop with the largest number of items had 201. Most of the shops were owned and run by Nepalese, while some ivory pieces were for sale in Tibetan-managed shops selling Tibetan souvenirs, but rarely did Indians sell ivory (they tend to manage shops selling shatoosh shawls and Kashmir-made curios).

Table 5: Number of shops and ivory items seen for sale in Kathmandu in 1998 and 2001

Year	No. of shops with ivory items	No. of items
1998	71	1,454
2001	57	1,546

Of the 1,546 ivory items offered for retail sale, the most common were figurines (see Table 6). There was no significant change in the type of ivory goods on sale over the three-year period, except for an increase in the number of rings and a decrease in the number of pendants. There were only a few large pieces of ivory for sale, because they are more difficult to conceal in tourists' luggage.

Table 6: Types of ivory items seen for retail sale in Kathmandu in early 2001

Item	Percentage of total items	
Figurine	43%	(40% in 1998)
a) human	37%	
b) animal	6%	
Painting on plaque	14%	(13% in 1998)
Bangle	11%	(10% in 1998)
Netsuke	9%	(13% in 1998)
Ring	6%	(1% in 1998)
Pendant	4%	(12% in 1998)
Box	1%	(1% in 1998)
Button	1%	-
Chopsticks, pair	1%	-
Necklace	1%	(2% in 1998)
Misc.	9%	(8% in 1998)

Each country tends to produce its own types of ivory items. The Nepalese items available were Hindu gods and goddesses, sculptures of Asian animals, pendants, bangles, kukris, paintings and boxes. Many of these pieces were made prior to 1990. The most common Chinese items were jewellery, figurines (humans and animals), netsukes, boxes and erotic pieces, all mostly newly made. India provided miniature paintings, usually made in Rajasthan (especially Jaipur), old and new bangles, necklaces and Hindu sculptures. Tibetan-made items were mostly old: phurpas (magic darts), prayer beads, hair rings traditionally worn by Tibetan men, boxes, bangles, rings, Buddhist sculptures and dorjes

(ritual "thunderbolts" that destroy all kinds of ignorance). Not a single item seen for sale was of African origin.

As said earlier, only 38% of the pieces for retail sale was made in Nepal versus 53% in 1998, according to the shopkeepers, a major decline. China followed with 33%, India with 22%, Tibet 6% and Japan, Hong Kong and Europe 1% (see Table 4).

The quality in the workmanship of the ivory varied considerably. Generally, the older pieces (Tibetan and Nepalese) are better carved than the newer ones, many of which were mass-produced in the 1980s with modern machinery in China, northern India and Hong Kong. China was still exporting these pieces in the 1990s, according to the shopkeepers, despite the CITES ban. The poorest workmanship seen were some of the miniature paintings on ivory plaques from India which were crudely painted, especially the erotic scenes, along with Nepalese rings and tiny sculptures.

Besides the new Nepalese ivory pieces, shop owners buy old pieces from the local people, some of which have come from the formerly wealthy elite. The Indian worked ivory objects are smuggled mostly by road to Nepal (according to Indian informers). Since the market for ivory products in Kathmandu is now small, Indian businessmen have to send other curios to Kathmandu in order to make their trade profitable. The Tibetans smuggle into Nepal by road old Tibetan ivory including some very old scroll paintings, teapots, silver bowls and jewellery, as well as newer ivory items from China. Some of the Nepalese shop owners said they order directly from China, Hong Kong and Japan and a few of them go to these countries themselves to collect the items.

The asking prices for the ivory commodities for sale varied greatly. The most expensive piece was a modern 75 cm tusk with many carvings made into it (an elephant bridge) from China. Although the workmanship was only mediocre, it was priced at USD 4,729. The second most expensive was another Chinese item, but an antique: a 10 cm snuff-box carved in the Ming dynasty and offered for USD 4,500. The most highly priced Nepalese-made item was a 45 cm sculpture of Krishna for USD 2,397. The cheapest items for sale were Nepalese 2.5 cm animals for only USD 0.69 (see Table 7). The main retail buyers were French, Germans, Italians and Japanese, the same nationalities as in 1998 (Martin, 1998). Nepalese and Indians (the largest number of tourists to Nepal) rarely buy ivory items except occasionally jewellery.

Table 7: Retail prices for ivory items in Kathmandu in February 2001

Item	Where made	Size in cm	Starting USD price*
JEWELLERY			
Bangle	India, Nepal	0.6	32
		1.2	47
Hair ring	Tibet	2.5	72
Necklace, 44 beads	China	3.7	125
		2.5	108
	Tibet (old)	2.5	148
Pendant	China	6.2	26
Ring	Nepal	0.3	3
FIGURINES			
Buddha	Nepal	2.5	19
		7.5	52
Elephant	Nepal	3.7	40
		7.5	191
Erotic couple	China	6.2	273
	Japan	7.5	467
Wild animal	Nepal	2.5	0.69
Woman	Nepal	10	251
	China	27	981
MISC.			
Bowl	Tibet (old)	10	727
Box	China	7.5	131
		12.5	534
Chess set	China	7.5	1,662
	Tibet (old)	7.5	325
Knife (kukri)	Nepal	42	1,292
Name seal	China	7.5	48
Netsuke	China	7.5	165
Painting on plaque	India	12.5 x 5	43
Pasa game	Nepal		497
Phurpa (magic dart)	Tibet	17.5	658

Item	Where made	Size in cm	Starting USD price*
		20 x 10	168
	Nepal	3.7 x 3.7	3
Prayer beads	Nepal	1.2	150
Snuff-box	Nepal	7.5	31

** For final price after bargaining, deduct about 30%*
N.B. USD 1 = 72.2 Nepalese rupees

Despite an increase in the number of tourists visiting the country from 254,885 in 1990 to 421,857 in 1997 (Shrestha, 2000) sales of ivory items, according to the shopkeepers, have declined by 90% since 1990 due to the decline in demand because it is has become illegal and less fashionable. Another reason is that tourists do not shop in general for souvenirs as much as they used to, according to the shopkeepers, perhaps because many of the items, including ivory, are for sale in their home countries. The retail prices for ivory in US dollars have actually remained roughly the same from 1998 to 2001 (while increasing in Nepalese rupees as a result of a devaluation by almost 20% over this period), but this has not helped sales.

By comparing which specific ivory items were for sale in each shop in 1998 with those in the same shop in early 2001, it was possible to determine which pieces had gone. Only about two-thirds of the ivory items surveyed for sale in 1998 had been replaced by 2001, meaning a minimum of 1,000 items had been sold over these three years or about one a day. One can assume that most of these pieces were sold, but it is possible that some were transferred to another shop or taken home by the owner or simply hidden away.

The owners of the main curio shops say they are starting to phase out ivory because it is not profitable enough. Instead, other curios are being offered for sale and they are displaying more wood and some bone carvings. Interestingly, they were not yet importing carvings of camel bone, which has become a substitute for ivory in northern India. In Rajasthan, a wide variety of camel bone items have been produced since 1990. Some are stained brown and others are bleached white to look like elephant ivory. The carvings are only mediocre and are much cheaper than ivory. For example, a camel bone Japanese name seal 7.5 cm long in Delhi sells for USD 5.40 but an ivory one in Kathmandu is USD 48. Unless the quality of camel bone items improves, this ivory substitute is unlikely to become popular in Nepal.

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