
WILL NEW COMMUNITY DEVELOPMENT PROJECTS HELP RHINO CONSERVATION IN NEPAL?

Esmond Martin

c/o WWF Regional Office, PO Box 62440, Nairobi, Kenya

RESUME

La conservation du rhino au Népal a connu un succès remarquable. La plus grande population de rhinos à corne unique a connu une croissance d'environ 95 animaux en 1968 jusqu'à un effectif de 550 individus avant la fin de 1997. Le Département des Parcs Nationaux et de la Conservation de la Faune (DPNCF) est entrain de démarrer un projet pour accroître les bénéfices des populations vivant à côté des Parcs Nationaux du Royal Chitwan et Royal Bardia. Cependant, l'argent alloué à ces Parcs par Le Royaume du Gouvernement du Nepal, a diminué récemment. Si ces budgets continuent de baisser, le braconnage pourra s'accroître. Ce rapport examinera les raisons du succès de la conservation du rhino du Nepal de 1994 à 1997 et décrira les nouveaux projets initiés pour faire bénéficier les villageois vivant autour des deux parcs, à partir des rhinos comme les autres espèces de faune sauvage.

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

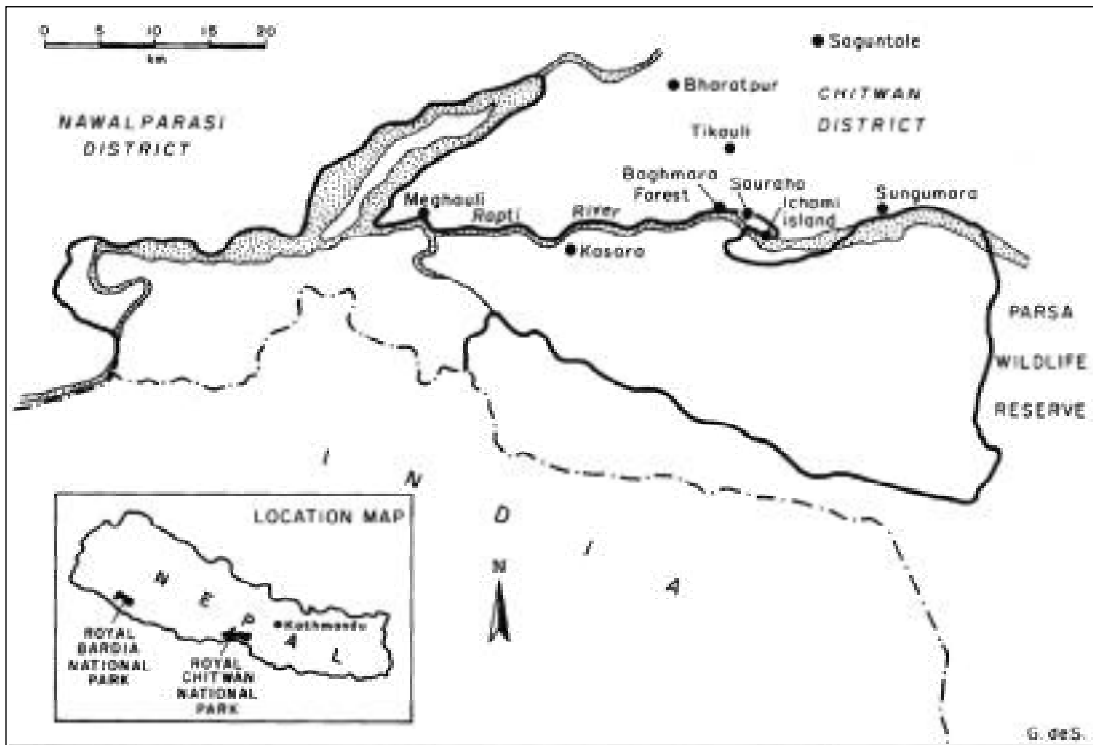
Although there was serious rhino poaching in the early 1990s (Marlin and Vigne, 1995), there were few poaching incidents from 1994 to 1997 (see Table 1). No rhinos have been poached in Bardia since November 1993 and the population rose to 44 in the Park by December 1997. From 1995 until the end of 1997 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 (see map) in early 1997.

Outside Chitwan Park, in 1995 an unsexed rhino was shot and killed just north of the boundary at Lankaline.

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.



Royal Chitwan National Park

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 Sagnantole, 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 Sagnantole. 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. com.). 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

Table 2. Number of rhino and tiger poachers in custody from 1 994-1997

Year	Rhino poachers caught in and around Royal Chitwan National Park	Rhino poachers caught in and around Royal Bardia National Park	Tiger poachers caught in and around Royal Chitwan National Park	Tiger poachers caught in and around Royal Bardia National Park
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.

the paying of this intelligence money as one of the most important factors in reducing both rhino and tiger poaching in Nepal (pers. corn.).

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. corn.). 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.

Photo Credit: Esmond Martin



Photo Credit: Esmond Martin



When an elephant driver sees a rhino urinating in Chitwan National Park, he will often collect the urine. People living around Chitwan believe it reduces chest congestion and asthma.

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 932km². 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 2km², again a very high density for an area of 968km².

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 1,024,000r (\$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. Bhuj, WWF Nepal, pers. comm.).

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?

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. IJNDP 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

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.

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
1982/13	1,167,250	c84,891	64,092	c4,661
1987/8	3,370,140	148,792	115,149	5,084
1988/9	4,795,565	188,431	*1,121,708	*44075
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	*94715
1992/13	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.

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.

Between April 1996 and April 1997 (Nepalese year

2053) two people were killed by rhinos and two more by other mammals in the 750km² 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 2,000,000 (\$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). IJNDP 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 40km 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, beekeeping 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

Photo Credit: Esmond Martin



The policy of allowing villagers into Bardia National Park to collect thatch and reeds for houses has been very popular. In the mid 1990s the grass-cutting season was shortened from 15 to 10 days to reduce disturbance to wildlife.

as roads and 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.

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.

Photo Credit: Esmond Martin



In Chitwan and Bardia Parks, villagers lightly burn some areas to help them collect the reeds. It also makes it easier for tourists to see rhinos.

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 replanted 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 formally 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

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 657,860kg 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 bafflers 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 460km² 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 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 750km² buffer zone (with its 300,000 people) and finance them with 50% of the total Park revenue (G.P. 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.

CONCLUSION

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 km² in the Park protecting rhinos, again one of the highest concentrations in the world. Bardia Park has about one person per 2km², 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 NOOs in the late 1980s and early 1990s, especially around the main rhino area of Chitwan Park. Bafflers 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

Photo Credit: Esmond Martin



Many parts of the rhino are for sale in Nepal as medicine, including the umbilical cord here offered for sale in Kathmandu.

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



Asian rhino horn is generally ten times more valuable than African rhino horn. Nails, like the horn, are consumed in many parts of Asia to lower fever, while the skin is used for curing human skin diseases.

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.

ACKNOWLEDGEMENTS

Thanks are due to the International Rhino Foundation and the Columbus Zoological Park Association for helping to fund the field-work in Nepal in January and February 1998. Thanks are also due to S. Bhatta, U.R. Bhujju, L. Choegyal, J. Edwards, S. Jnawali, R.C. Kandel, T. Khatri, T. Maskey, C. McDougal, S. Nepali, N. Poudel, U.R. Sharma, P.B. Shrestha, B. Silwal, G.P. Upadhyay, P. Yonzon and various anonymous people for their time and assistance, as well as Lucy Vigne for all of her help.

REFERENCES

Bhatta, S.R. (1997) Poaching and Anti-Poaching Activities in Royal Bardia National Park, Report for the Department of National Parks and Wildlife Conservation (unpublished).

Khatri, T.B. (1998) Baghmara Community Forestry: A Community-based Eco-tourism Enterprise, Paper for the National Eco-tourism Workshop, 28 December 1997—14 January 1998, Nepal (unpublished).

King Mahendra Trust for Nature Conservation (1997) *Annual Report 1997*, Kathmandu.

Martin, E.B. and Vigne, L. (1995) Nepal's Rhinos - One of the Greatest Conservation Success Stories, *Pachyderm* 20, 10-26.

Martin, E.B. (1996) The Importance of Park Budgets, Intelligence Networks and Competent Management for Successful Conservation of the Greater One-Homed Rhinoceros. *Pachyderm* 22, 10-17.

Maskey, T.M. (1998) The Status of CITES Implementation and Trade of Wild Animals in Nepal. Report for the Ministry of Forest and Soil Conservation, Kathmandu (unpublished), Nepal.

Parks and People Project (1997) *Project Status Report January to June 1997*. Parks and People Project, Department of National Parks and Wildlife Conservation, Kathmandu, Nepal.

Silwal, B.B. (1997) *Impact and Challenges of Buffer Zone Management (Analysis of Case Studies)*. HMG/ Department of National Parks and Wildlife Conservation, and United Nations Development Programme, Kathmandu, Nepal.