

Successful reduction in rhino poaching in Nepal

Esmond Martin, Chryssee Martin and Lucy Vigne

PO Box 15510–00503, Nairobi, Kenya; email: rhino@wananchi.com

Abstract

Well deserving accolades, Nepal has succeeded in granting better protection for its Asian rhino population than has any other country. According to the 2011 census, Chitwan National Park, Bardia National Park and Suklaphanta Wildlife Reserve had a total of 534 greater one-horned rhinos. In that year, only one rhino was poached. In 2012, just one other rhino was illegally killed. In November 2010 the Nepalese government set up three wildlife crime-control committees to work together nationally and in the districts to combat poaching and illegal wildlife trade in coordination with the Department of National Parks and Wildlife Conservation, the Forest Department, Customs, the army, the police, the National Investigation Department and the Crime Investigation Bureau. Emphasis was placed on apprehending traders, identifying smuggling routes and enlisting other governments in the region to coordinate action against wildlife culprits. The cooperation of Nepal's own government departments, help from non-government conservation organizations and commitment from local people living near the boundaries of the three protected wildlife areas led to more measures taken to ensure rhino protection. These measures included training of law-enforcement officers, enforced severe penalties for wildlife crimes, better anti-poaching units composed of members of the communities living around the parks, improved intelligence gathering, and more money allocated to the communities as a result of increased park income from higher entry fees, and a higher number of tourists. Local communities receive 50% of the gross income of the three protected areas. In addition, local communities are financially benefiting from providing more amenities to tourists. Despite escalating prices for rhino horn in China and Vietnam, Nepal has curtailed poachers and traders. Other rhino range States in Asia and Africa have much to learn from Nepal's successes in rhino protection.

Additional key words: greater one-horned rhino, Chitwan, Bardia, Suklaphanta, anti-poaching measures, rhino horn traders, law enforcement

Résumé

Des éloges bien mérités, le Népal a réussi à accorder une meilleure protection de sa population de rhinocéros d'Asie que n'importe quel autre pays. Selon le recensement de 2011, le parc national de Chitwan, le parc National de Bardia et la réserve de la faune de Suklaphanta avaient un total de 534 grands rhinocéros unicorns. Cette année-là, un seul rhinocéros a été braconné. En 2012, juste un autre rhinocéros a été tué illégalement. En novembre 2010, le gouvernement népalais a mis en place trois comités de lutte contre la criminalité de la faune sauvage pour travailler ensemble à l'échelle nationale et dans les districts pour lutter contre le braconnage et le commerce illégal des espèces sauvages en coordination avec le Département des parcs nationaux et de la conservation de la faune, le Département des forêts, les douanes, l'armée, la police, le Département national des enquêtes et le Bureau des enquêtes criminelles. L'accent a été mis sur l'arrestation des commerçants, l'identification des itinéraires de contrebande et à la collaboration avec d'autres gouvernements de la région pour coordonner l'action contre les coupables de la faune. La coopération des départements gouvernementaux du Népal, l'aide des organisations non gouvernementales de conservation et l'engagement des populations locales vivant à proximité des limites des trois zones naturelles protégées ont facilité la prise de plusieurs mesures pour assurer la protection des rhinocéros. Ces mesures comprenaient la formation des agents de mise en application de la loi, des peines sévères pour les crimes de la faune, de meilleures unités anti-braconnage composées des membres des communautés vivant autour des parcs, amélioration de la collecte de renseignements et plus d'argent

alloué aux communautés en raison de l'augmentation des revenus du parc provenant des droits d'entrée plus élevés, et un plus grand nombre de touristes. Les collectivités locales reçoivent 50% du revenu brut des trois aires protégées. En outre, les collectivités locales profitent financièrement de la provision de plus de services aux touristes. Malgré la hausse des prix de la corne de rhinocéros en Chine et au Vietnam, le Népal a réduit le braconnage et le commerce. D'autres Etats de l'aire de distribution de rhinocéros en Asie et en Afrique ont beaucoup à apprendre des succès du Népal en matière de protection des rhinocéros.

Mots clés supplémentaires : grand rhinocéros unicorne, Chitwan, Bardia, Suklaphanta, mesures anti-braconnages, commerçants de la corne de rhinocéros, application de la loi

Introduction

Nepal, home to a population of over 500 greater one-horned rhinos, has witnessed a remarkable decline in rhino poaching, with only one rhino a year illegally killed in 2011 and 2012. This is despite the price of rhino horn increasing several-fold since 2005 in the consumer markets of East Asia. In comparison, during this period the number of rhinos killed in Africa and Asia has been the worst for many years. South Africa, which has 72% of the world's approximately 29,000 wild rhinos, lost from poaching at least 448 in 2011 and 668 in 2012 (Mike Knight, Chairman, IUCN SSC African Rhino Specialist Group, pers. comm., February 2013). Rhino poaching has also been significant during this period in Kenya and Zimbabwe.

This paper examines how Nepal, one of the poorest countries in the world and with a generally weak governance, has been able to implement such a successful rhino conservation programme. We consider which anti-poaching strategies that Nepal has followed could be implemented in other range States.

Methods

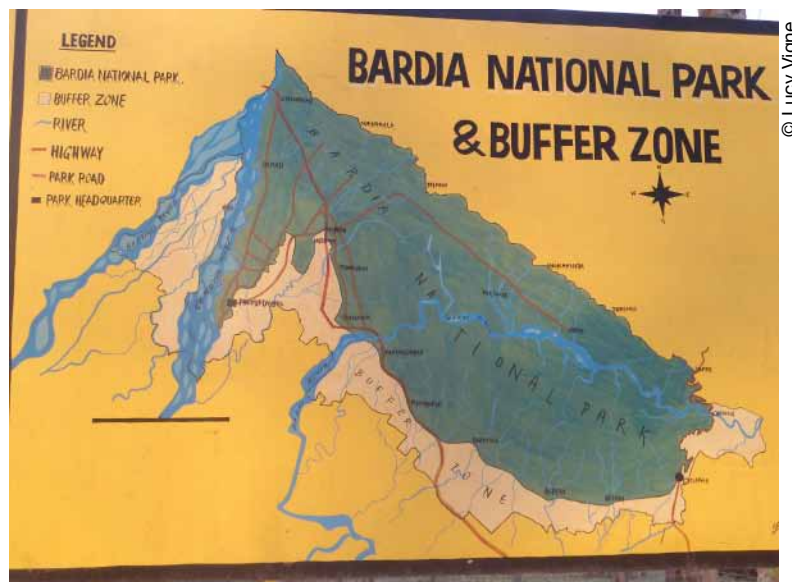
Fieldwork was carried out in Nepal, mostly in Kathmandu, Chitwan National Park (NP), Bardia NP and Suklaphanta Wildlife Reserve (WR) in March and December 2012. We interviewed extensively members of the Department of National Parks and Wildlife Conservation (DNPWC), who manage Nepal's three wildlife protected areas with rhinos, along with army officers

based inside these areas to protect the rhinos. We talked to Forest Department officials and updated information on illegal wildlife product trade networks. We met the staff of several wildlife non-government organizations (NGOs) involved in rhino conservation, including WWF and the National Trust for Nature Conservation (NTNC), as well as personnel in the tourist sector. We collected unpublished statistics from the DNPWC and other government departments.

Results

A fall in rhino poaching in and around Chitwan NP from 2008 to 2012, and recent arrests

In 2008 the DNPWC, with assistance from other government departments and NGOs, carried out a detailed rhino count that showed there were 408 rhinos



This map of Bardia shows the extensive buffer zone along the southern edge towards the Indian border, benefiting people and rhinos alike.

in Chitwan NP, 22 in Bardia NP and an estimated 5 in Suklaphanta WR (DNPWC 2008; Martin et al. 2008/2009). A similar census was carried out in April 2011. The count recorded 503 rhinos in Chitwan NP, 24 in Bardia NP and 7 in Suklaphanta WR. There were thus a total of 534 wild rhinos in Nepal in 2011 (DNPWC 2011). This increase of 99 rhinos during this period can be attributed to both a healthy population growth rate and a decrease in rhino poaching. All Nepal's rhinos are the greater one-horned species that are found also in northern India in the extensive grassland region just south of the Himalayas.

In 2008, 7 rhinos were poached in and around Chitwan NP, 6 within the park and 1 just outside; all had been shot. In 2009, 10 rhinos were shot dead, 7 inside the park and 3 in the Buffer Zone (Martin and Martin 2010). In 2010, 9 were poached, 8 in the park; all were adults that had been killed with guns (Babu Ram Lamichhane, conservation officer, NTNC, pers. comm., December 2012). In February 2011 the police were able to arrest five of the poachers who had killed 7 of the rhinos in 2010. They were all from the same family, according to press reports.

On 3 January 2011, one rhino was poached, the only one that year. It was an adult male shot in the southern part of the park at Dhobe. The poachers took the horn. The Nepalese used to cut off some of the skin and nails for traditional purposes, but demand is now down for these. Soon after this poaching incident, officials caught one poacher and the middleman, who had already sold the horn to a Tibetan trader in Kathmandu for export (Krishna Prasad Acharya, former director general of DNPWC, pers. comm., December 2012).

On 3 April 2012, one rhino was poached, again the only one for the year. It was an adult female killed inside the park on the western side at Sailimaili Khola. It too had been shot. At least three poachers were involved; they took only the horn. Bringing in a sniffer dog, the Kathmandu police team assisted the game scouts in finding the carcass. This was the first time that a sniffer dog had been used to track poachers in the field in Nepal. The police followed the poachers' trail to the Indian border; most likely the poachers were all Indian nationals who got assistance from local Nepalese familiar with the region's topography. The dog could not enter India so nobody at first was caught, but later, one gang member who had carried the supplies was arrested in India (Kamal Jung Kunwar, under-secretary, DNPWC; Jhamak B.

Karki, chief conservation officer, Chitwan NP; Ganga Jang Thapa, executive officer, NTNC; Lamichhane; and Rupak Maharjan, assistant conservation officer, Kasara, Chitwan NP; all pers. comm., December 2012).

A fall in rhino poaching in and around Bardia NP and Suklaphanta WR from 2008 to 2012

In 2008, two rhinos were poached in Bardia NP (Martin et al. 2008/9), but from 2009 to the end of 2012 no rhino is known to have been poached there (DNPWC 2011, unpublished data; DNPWC 2012). This is in contrast to the seven years before 2008 when at least 60 rhinos were poached in Bardia NP, although few carcasses were ever found at that time due to lack of patrolling (Martin et al. 2008/9). As for Suklaphanta WR, no rhinos were poached from 2008 to the end of 2012, a reserve more famous for its large population of swamp deer that numbered 1,743 during the April 2011 census (Binay Kumar, DNPWC, Suklaphanta WR, pers. comm., March 2012).

Factors contributing to the sharp decline in rhino poaching in Nepal in 2011 and 2012

From an average of nearly 10 rhinos poached a year in Nepal from 2008 to 2010, the number dropped to only 1 a year in 2011 and 2012. This has been due to some effective rhino-protection strategies, greatly improving important new approaches to curtailing the rhino horn trade and initiating others.

In 2010 the national and district governments established new committees to combat wildlife crime. The prime minister was himself active in this important development. At a Cabinet meeting on 21 November 2010 chaired by the prime minister, the government set up wildlife crime control committees within the Ministry of Forest and Soil Conservation, under which the DNPWC falls. The committees consist of the National Wildlife Crime Control Coordination Committee (NWCCCC), the Wildlife Crime Control Bureau (WCCB) Central Level, and the Wildlife Crime Control Bureau District Level, of which there are 19 scattered throughout the country.

The government's new NWCCCC consists of members from various ministries with expertise in fighting wildlife crime. NWCCCC establishes policies and gives advice to other bodies to control crimes

related to wildlife. The WCCB Central Level includes high-level representatives from the DNPWC, the Forest Department, Customs, army, police, the National Investigation Department and the Crime Investigation Bureau (CIB). The WCCB District Level involves officers from the same departments but excludes the CIB. The duties of the WCCB are to control poaching and all aspects of wildlife crime, with emphasis on catching traders and exposing smuggling routes locally and internationally. Recently the CIB established the Wildlife Crime Pillar III to reduce the poaching of large mammals. Police are now arresting suspected poachers and traders all over Nepal, which they rarely did before. The CIB has been providing money for intelligence. The CIB, the DNPWC and the Forest Department have been collaborating well with one another, sharing information and improving their anti-poaching efforts, such as by using the police sniffer dog in 2012. The CIB now alerts the DNPWC and the Forest Department of the whereabouts of poachers to enable them to carry out arrests beyond the protected areas. Before late 2010, park staff were limited to arresting rhino poachers only within and adjacent to the rhino-protected areas, but since late 2010 there have been considerable successes in apprehending poachers and traders farther afield (Acharya and Kandel 2012; Narendra Pradhan, former chief warden of Chitwan NP, pers. comm., December 2012).

Nepal has had high penalties for wildlife crime for some years. The district forest officers (DFOs) and the chief wardens all have the power to issue penalties and imprison wildlife criminals. Prosecutions are thus simple and frequent. Jail sentences are up to 15 years with a fine of up to NPR 100,000 (Nepal rupee) (USD 1,149) or both. They can be appealed at the Appellate Court, but usually the court supports the penalties. These heavy jail sentences and fines are indeed an effective deterrent against poachers and traders, and more people now know how great is the risk they take in attempting poaching.

On the international front, in January 2011 a regional network called South Asia Wildlife Enforcement Network (SAWEN) was set up to fight wildlife crime; it involves Afghanistan, Bangladesh, Bhutan, India, Maldives, Nepal, Pakistan and Sri Lanka. The



© Lucy Vigne

Women are often seen carrying firewood from the sal forests in the remote region of Suklaphanta Wildlife Reserve.

secretariat is based in Kathmandu. SAWEN aims to facilitate coordination among member countries to control poaching and illegal wildlife trade in South Asia. Cross-border communication is improving between Nepal and India, as witnessed by the arrest of a poacher in India after the 2012 rhino-poaching incident. All three of these wildlife protected areas in Nepal border India. In March 2012 forest officers in India informed the DNPWC staff at Suklaphanta WR that two of their seven rhinos had temporarily crossed into India, demonstrating good cooperation and communication in guarding the rhinos between the Nepal and India border (Binay Kumar, pers. comm., March 2012).

The Nepal Army has also improved their anti-poaching activities. Earlier, during the Maoist insurgency from 1995 to 2006 the army that is based inside Chitwan NP, Bardia NP and Suklaphanta WR withdrew many of the scattered posts to concentrate their men for greater security. For instance, in Chitwan NP in late 2009 the army and the park staff had only 32 posts but by 2012 they were manning 51 posts and had greatly expanded their patrol work. The morale of the army in Chitwan NP, Bardia NP and Suklaphanta WR has improved due to the increased numbers of occupied posts in all three areas. In 2011 and 2012 the army put greater emphasis on security for wildlife since it no longer had to protect people from the Maoists. While the army until recently could only in extreme circumstances arrest poachers outside the protected areas, soldiers can now follow poachers into the surrounding areas and apprehend them wherever they are. In 2012 the army could also gather information on wildlife poachers and traders outside

the park—another important new development. The army in Chitwan NP also has started mobile camps: there are now two mobile camps with 10–15 personnel for each one. The army's cooperation with park staff, forest officers and other government departments has been steadily improving, enabling more effective rhino protection.

NGOs have also played an increasing role in rhino anti-poaching. Between 2009 and 2011, NTNC and the Zoological Society of London (ZSL) trained over 85 park staff in rhino-protected areas (Naresh Subedi, NTNC, pers. comm., July 2013). In 2012 WWF trained 55 enforcement officials on investigation and prosecution of wildlife crimes. The training was conducted in Bardia and Chitwan NPs and involved officials from many organizations (WWF 2012). NGOs have continued to help the communities around the parks and have initiated new projects. In addition, the government established a new buffer zone north of Bardia NP's Babai Valley where most of the rhino poaching took place in the past. Here NTNC and the DNPWC have set up anti-poaching units from the local communities. In one month alone—October 2012—these units helped to confiscate 41 guns from poachers in this area (Thapa, pers. comm., December 2012). Families who give up guns are supported with alternative livelihoods through NTNC, DNPWC and WWF Nepal. An ongoing project aims to bring these communities into mainstream conservation through education and livelihood support. This project is largely funded by the United States Fish and Wildlife Service (Subedi, pers. comm., July 2013).

In mid-2012 the DNPWC substantially increased the entry fees to those visiting Chitwan NP, Bardia NP and Suklaphanta WR, increasing revenue partly to enable a larger amount to be paid to the local communities. Income earned by parks goes to the Central Treasury, which then allocates a budget to the DNPWC. In fact, the DNPWC based in Chitwan NP spent less than it earned in 2010/11: USD 755,319 expenditure versus USD 1,154,805 earnings (DNPWC 2011)! Chitwan NP's total budget remains high compared with other government protected areas for rhinos in Asia and Africa. Combining the budgets for the DNPWC and the army, over USD 1,400 a year per km² is spent (unpublished data from the DNPWC and the army). A foreigner (excluding from neighbouring countries, which pay rather less) now pays NPR 1,500 (USD 17), up from NPR 500 (USD 7) in 2011 per day entry fee, and pays for a one-hour ride on a

government elephant NPR 2,500 (USD 29), up from NPR 1,000 (USD 14) per person in 2011. A Nepalese visitor now pays NPR 100 (USD 1) entry fee, up from NPR 20 (USD 0.28). Tourist numbers have steadily increased thanks to the end of the Maoist insurgency and Nepal's better security. In Chitwan NP in the financial year 2009/10 there were 115,181 visitors (72,973 foreigners, 31,309 Nepalese, and 10,899 from neighbouring countries). In the financial year 2010/11 the number rose to 146,620 (90,717 foreigners, 39,898 Nepalese and 16,005 from neighbouring countries). Bardia's visitors also increased during this time from 6,248 to 8,055 (of whom 3,959 were foreigners). In comparison, Suklaphanta's visitors remained very low at 358 in 2010/11, due to the reserve being tucked away in the undeveloped far southwest of the country, which few people visit (DNPWC 2010, 2011).

Cooperation and communication have improved between the DNPWC and the local communities living around the wildlife protected areas. Many of the thousands of people in the buffer zones now have learned that they are given a 50% share of the DNPWC's protected area gross revenue, and thus they understand it is in their interest to protect rhinos, which attract the tourists. One way that the communities around Bardia NP help protect rhinos is to contribute voluntarily over 100 youths to patrol the borders of Bardia NP and this has become more efficient due to the better coordination between the park and the community. In Chitwan NP, 22 user committees—groups within the buffer zone—provide voluntary anti-poaching units of between 9 and 13 people for each unit. In 2011 and 2012 local farmers and villagers became more experienced and committed, spotting outsiders coming into the area possibly attempting to find out about rhinos to poach (Lamichhane, pers. comm., 2012; Amir Maharjan, assistant conservation officer, Sauraha, Chitwan NP, pers. comm., December 2012).

For several years some of the local communities in the buffer zones, such as those around Chitwan's tourist hub of Sauraha, have been increasing their own tourist enterprises, thus receiving more direct tourist revenue. Often they present evening entertainment of traditional music and dancing, and they also give walking tours of their villages. With tourism growing since 2010, they have been putting a far greater effort into protecting rhinos that come into their areas. For instance, the Baghmara Community Forest near Sauraha employed 23 security guards in

2012 (Maharjan, pers. comm., 2012). The Bellata Community Forest situated near Chitwan NP's headquarters at Kasara also obtains revenue from tourists staying at nearby lodges. More lodges are being built there on private land and a new large one opened in 2012. Many more tourists visited the Bellata Community Forest in 2012 than earlier. The lodges arrange for each tourist to pay the community NPR 250 (USD 3) to walk in the forest and NPR 350 (USD 4) for an elephant to take passengers for a ride in the forest (Krishna Prasad Paudel, naturalist, Machan Paradise View, pers. comm., December 2012). Next to Bardia NP in the southwest buffer zone, some of the people living quite close to the headquarters have set up homestays where visitors, mainly from nearby India, can come and stay in their homes inexpensively, enjoying a rural setting and a peaceful atmosphere. The homestay owners have developed their skills in cooking, housekeeping and hospitality, with training from NGOs such as WWF and NTNC. They are thus receiving increased income from tourism, enabling them to improve their standard of living, buying more bicycles and building houses with more modern materials (Premi Khadka, owner



© Lucy Vigne

To the west of Bardia National Park headquarters along the park boundary are several homestays where villagers invite visitors to stay. This has improved their livelihoods considerably.



© Lucy Vigne

Tourists enjoy taking elephant rides in Bardia National Park – the best way to spot a rhino.

of Bardia Jungle Cottage, pers. comm., March 2012). Near some of these homestays just outside the park is a waterhole that attracts rhinos, enabling tourists to see a rhino close up. As many tourists' prime wish is to see elephants, rhinos and tigers, the villagers are now keener to protect Bardia and any of the animals that may stray afield.

Rhino protection has also been significantly improved, thanks to the DNPWC's rhino identification and monitoring system. ZSL and NTNC started a project with the DNPWC in 2008 to photograph rhinos and record their body markings on computer to recognize individuals. Nearly all Bardia's rhinos were recorded in 2009, and by the end of 2012, 120 rhinos had been identified in Chitwan NP (Lamichhane, pers. comm., December 2012). In 2010, the DNPWC with ZSL and NTNC established the Management Information System Technology (MIST) to improve monitoring and managing key species. First introduced into Suklaphanta WR, then Bardia NP and finally Chitwan NP, park and army staff complete forms documenting what the ground personnel have seen on patrol, and this information is fed into a database at their headquarters. It has improved the management of the rhinos, enabling more protection for them (Thapa, pers. comm., December 2012).

Intelligence has been greatly strengthened in Chitwan NP, home to 94% of Nepal's rhinos. Senior staff have recruited new and more reliable informers, putting them in more strategic locations and providing

them with greater incentives. In 2009 there were 16 informers around Chitwan NP; in 2012 the number rose to 20, with most in the buffer zones. Payments to informers increased from NPR 2,000–3,000 (USD 27–41) a month in 2009 to NPR 3,000–8,000 (USD 35–96) a month in 2012, funded mostly by WWF, NTNC and ZSL.

The government has maintained a high concentration of staff in the rhino-protected areas. Suklaphanta WR, as well as having 14 army posts, has 15 wildlife guard posts including 3 new ones (Binay Kumar, DNPWC, Suklaphanta WR). In Chitwan NP, the government maintains an army battalion of 850 men—the same number for many years—along with 268 park staff in 2012, thus totalling 1,118 men in the park. This works out to about 1.2 people per km² for Chitwan NP—one of the highest concentrations for any government-managed rhino park or reserve in the world. In addition, near the western boundary of Chitwan NP in Nawalparasi District, a newly introduced army company of 350 men has been posted to carry out rhino anti-poaching activities, mainly by foot patrols.

A final factor that has helped to reduce rhino poaching in 2011 and 2012 has been the more aggressive role of the media, publicizing the urgent need for rhino protection. The DNPWC gives reports to the media that are used for awareness campaigns on the radio and television and in the press. The media have also actively criticized the government authorities when they have been seen not to be effective in reducing wildlife crime or human–wildlife conflict. The press has thus helped to increase transparency in some government departments by exposing mismanagement and corruption. Overall, the DNPWC is now largely free of corruption and senior staff are committed to wildlife conservation, a major factor in helping to reduce rhino poaching.

Results on the crackdown of rhino poachers and traders

Through cooperative effort, 55 rhino poachers and traders were arrested in 2010/11 in and around Chitwan NP (unpublished statistics, Chitwan NP). In October 2012, officials arrested an entire chain of rhino criminals in quick succession: the gang of poachers and two traders. The poaching gang consisted of 17 people, all arrested in the Chitwan area, including two women in the gang, being less likely suspects. The gang possessed NPR 900,000 (USD 10,345) in cash.



© Lucy Vigne

A mahout rides his domesticated elephant across the Karnali floodplain in Bardia National Park, the most effective form of patrolling.

The two traders, who lived in the Kathmandu area, were also arrested. This operation was a collaborative effort involving the DNPWC, CIB, the army and various NGOs (Lamichhane, pers. comm., December 2012). Since the government set up the NWCCCC, WCCB and Wildlife Crime Pillar III, officials have arrested and jailed several of the big wildlife traders, who were mainly based in Kathmandu. Arrest warrants had been out for some for 10 years or more (Acharya and Kandel 2012). By the end of 2012, according to Mr Acharya, only two major groups of wildlife traders were still operating in Nepal, down from seven in 2010 (pers. comm., December 2012).

During the financial year of 2010/11 the Forest Department office in Kathmandu arrested 50 wildlife traders and poachers with 13 leopard skins, 9 red panda skins, 6 fake rhino horns, 1 real rhino horn, various bird species, many musk pods from the male musk deer and other items (unpublished statistics, DFO, Kathmandu). Even the antique and curio shop owners in Kathmandu know about the government's enhanced efforts to eliminate sales of prohibited wildlife products. In a survey of wild animal products for sale in these shops, we found only one item: an antique container made from a rhino nail to hold powder, priced at USD 862.

A growing number of government rhino horns are in stock in Nepal and officials are aware of the need for tighter security. The former king's palace in Kathmandu has 90 rhino horns and some officials want to transfer them to somewhere safer. Mr Acharya, in his new position as chief of the Planning and Human Resource Division in the Ministry of Forests and Soils, is involved in the important job of improving

rhino-horn storage facilities for Chitwan NP where the majority of Nepal's horn is stored (Acharya, pers. comm., 2012).

Discussion

Ample evidence proves that the new government institutions in Nepal, as well as the expanded and improved anti-poaching activities implemented by officials, communities and NGOs, have resulted in less wildlife crime, with arrests and prosecutions of the main rhino poachers and traders and a fall in the sale of rhino horn in 2011 and 2012.

Other major factors responsible for the drop in rhino poaching in Nepal have been open and supportive cross-border communication between Nepalese and Indian officials; more power allocated to the army in anti-poaching work; increased NGO support to the communities regarding rhino awareness and protection; and higher park entry fees providing, among other things, more money for rhino protection and more money for the local communities. The people living in the buffer zones are now showing greater support for rhinos, and there is better communication between them and the DNPWC. Having become more involved in rhino protection in the buffer zones, they have helped to increase tourist numbers, and more communities are involved in rhino-based tourism. Also, rhino monitoring has improved considerably through using the rhino identification database, intelligence has expanded notably, and the number of government staff in the rhino ecosystems helping in anti-poaching has increased. More support from the media has added to these successes.

It would be advisable for those involved in rhino protection elsewhere in Asia and Africa to implement some of the strategies described in this article that have been responsible for Nepal's reduction of rhino poaching since late 2010. The most important of these is a greater commitment from governments towards rhino conservation. It is vital for heads of State to support rhino conservation. Other important factors that require only a small administrative and financial cost to implement include strengthened intelligence networks, more stringent penalties for rhino crimes, and improved relations between officials and the people surrounding rhino-protected areas.

Conclusion

Nepal, a poor country with generally weak governance, almost eliminated rhino poaching in 2011 and 2012 as only two rhinos were poached during this time. This is primarily due to an increased commitment by the government to halting wildlife crime by introducing new crime-control committees that succeeded in arresting and prosecuting poachers and traders, enabling an overwhelming decline in rhino poaching. The communities living near the protected areas have also shown remarkable improvements in their anti-poaching efforts. Many of the main rhino poaching and trading gangs in Nepal have now been caught.

This accomplishment is extraordinary, especially since the price of rhino horn in the main markets in Vietnam and China has sharply escalated in recent years. Other rhino range States in Asia and Africa have much to learn from Nepal's success.

Acknowledgements

Thanks are due to The Aspinall Foundation for funding work in Nepal, and individuals mentioned in the text, and also Andrew Duncan, for their help.

References

- Acharya K, Kandel P. 2012. Controlling wildlife crime in Nepal. In: *Biodiversity conservation in Nepal*. Department of National Parks and Wildlife Conservation, Kathmandu.
- [DNPWC] Department of National Parks and Wildlife Conservation. 2008. *Annual report Shrawan 2064–Ashad 2065, 2007–2008*. DNPWC, Kathmandu.
- [DNPWC] Department of National Parks and Wildlife Conservation. 2010. *Annual report Shrawan 2066 to Ashad 2067/July 2009 to June 2010*. DNPWC, Kathmandu.
- [DNPWC] Department of National Parks and Wildlife Conservation. 2011. *Annual report Shrawan 2067–Ashad 2068/July 2010–June 2011*. DNPWC, Kathmandu.
- Martin E, Martin C. 2010. Enhanced community support reduces rhino poaching in Nepal. *Pachyderm* 48:48–56.
- Martin E, Martin C, Vigne L. 2008/2009. Recent political disturbances in Nepal threaten rhinos: lessons to learn. *Pachyderm* 45:98–107.
- WWF. 2012. *WWF Nepal annual report 2012*. WWF, Kathmandu.