First six monthly progress report DI 16-009

"Crisis to Biological Management: Rhinoceros and Public Engagement – Nepal"

April – September 2007

Darwin Initiative

Submitted to:

Darwin Initiative

Prepared October 2007 by:

Zoological Society of London[1] and
National Trust for Nature Conservation (NTNC)
Nepal

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Project Ref. No.	009-16
Project Title	Crisis to Biological Management – Rhinoceros, grasslands and public engagement Nepal
Country(ies)	Nepal
UK Organisation	Zoological Society of London
Partners	(1) Nepal Trust for Nature Conservation NTNC (2) Department of National Parks and Wildlife Nepal DNWPC (3) World Wide Fund For Nature WWF (4) International Union Conservation Nature and Natural Resources IUCN Nepal
Collaborator(s)	Shaun Murphy CABI Richard Moller Lewa Wildlife Conservancy Nick Ellenborgen Theatre for Africa Rod Potter SANPARKS
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Project website	part of ZSL site (http://www.zsl.org/field-conservation/deserts-and-rangelands/rhino)

1. Outline progress over the last 6 months (April to September) against the agreed baseline timetable for the project.

Progress against agreed milestones for the 1st and 2nd quarters:

i) *Training material developed and at least 30 staff trained in large mammal census techniques.* **Training material nearly completed but training delayed.**

ii) *Rhino total census completed in Chitwan and Bardia National Park.* **As it was late in the season it was only possible to do one of the areas. Rhino total count in Bardia – report annex 1; Bardia count not undertaken in 2005 and given the evidence of poaching it was decided to conduct this census. 31 animals identified and loss of animals ~70+ from Babai Valley since last census confirmed.**

iii) *Training materials (manuals, posters etc) for instructors and park staff in monitoring, anti-poaching and surveillance techniques developed; Formal theoretical examinations and practical tests for accreditation of instructors and monitoring staff produced.* **Rhino monitoring instructors training manual – this is nearly completed; others in process.**

iv) *Training workshop completed – Training of at least 10 CNP, BNP, SWR, buffer zone community forest and NTNC staff as instructors in monitoring, anti-poaching and surveillance techniques;* **This is delayed to Jan 2008**. **Field standardised data collection forms, data quality control procedures and protocols produced All data collection forms have been produced and trialed and these are now being modified. Patrol and Rhino sighting**

forms are now being used by the field staff. Rhino master ID files template has been produced and setup. The 3 park field teams are now gradually creating the individual rhino ID records. Database system – design document has been produced (document available); development of a stand-alone database system is progressing well with the data entry element completed and reviewed with field team, reporting element including the GIS tool is now being developed and will be completed by the end of the year.

v) **Regular block monitoring – Regular block monitoring systems have been developed for Bardia and Shuklaphanta. Monitoring has been started after the heavy monsoon months. Block monitoring in the Barandhabar forest corridor in Chitwan was also conducted in August 2007 (report available). Regular monitoring will be undertaken in this area and will be used as a pilot programme. A monitoring programme for the whole park and the buffer zone will be developed after the site specific rhino management plan workshop and the total count in March.**

vi) 5-day trainer's course + regular on-site training and support as required – **planned for Jan 2008**

vii) *Support admin:* **Steering committee established; Ganga Thapa, Shant Jnawalai (NTNC), Shyan Bajimaya, Nirendra Pokharal (DNPWC), Richard Kock, Raj Amin (ZSL). Project management reporting procedures and ToRs setup: NTNC providing quarterly activity and financial reports; ZSL mission reports; specific consultancy and operational reports e.g. census. Project meeting held in Kathmandu – attended by all partners and relevant NGOs, groups; coordination framework produced, working groups for each project area established and detailed implementation plans being drawn up.**

viii) *Information gathering*: **Background information gathering on manuals, education materials and invasive species.**

ix) *Info-sharing:* **Census material circulated.**

x) *Network development*: **Establish links with Assam and Asian Rhino Specialist Group. Local NGOs e.g. Media Consultancy Nepal**

xi) *Media coverage (UK)*: **Press release on project through ZSL.**

Activities not included in agreed timetable:

Education material – Mobile education truck bought; Rhino education cards produced; grassland poster designed and being completed; rhino poster designed and being completed; grassland cards and activity booklet are being produced; electronic presentation material being developed; initial list of touch material produced. To raise level of conservation awareness among school children, conservation education activities were conducted. NTNC together with other conservation partners have established a number of student environment groups/eco-clubs in different schools of the Buffer zone. At present, sixty seven schools have formed eco-clubs and an umbrella network called Eco-Club Network Bardia. The eco-club network coordinates all the conservation education activities launched at school level. Darwin conservation education liaison officer has initiated conservation education classes among students from different schools. Recently, a street drama called REGRET was prepared and launched at Thakurdwara by eco-club network.

Community engagement activities – A community has been identified for the mentha crops and processing plant. An implementation plan is now being produced. A plan is also being produced for electric fence pilot study in Chitwan and Bardia NPs (complete report will be provided in the annual report). A number of meetings were organized among local people living adjacent to the park boundary. Similarly, one day interaction program was also organised among the members of

Buffer Zone Management Committee and User Committees to share the objectives of rhino monitoring program. Besides, wildlife crop damage prone sites were identified and future plans to erect power fence to minimize the crop damage and property loss by large mammals, such as rhinos and elephants were outlined. Over 20 ha of rice field was completely damaged by elephant in NTNC's working areas in Shivpur, Thakudwara and Suryapatuwa VDCs. Similarly, more than 100 houses were destroyed by wild elephants.

Crop protection

Power Fence: BCC together with Kathar Buffer Zone Users Committee has identified most potential wildlife crop damage prone area in Kathar, northern eastern proximity of CNP. The Darwin project is planning to erect the power fence.

Milestones not yet reached: **Chitwan census – delayed due to seasonal factors. 30 staff are yet to be trained in large mammal census techniques – due to delays in resolving DNPWC staff positions. National rhino censuses will now take place in February – March after the grass has been cut and burnt thus providing much better visibility. Training materials for instructors and park staff in anti-poaching and surveillance techniques are being developed; Formal theoretical examinations and practical tests for accreditation of instructors and monitoring staff are being produced.**

Modified milestones **Chitwan census planned for next half year. Training in large mammal census techniques delayed to January 2008. Remaining training materials to be finalised in next 3 months. Training of NTNC and Buffer Zone community instructors planned for early 2008**

Summary:

This project has been taken up with considerable enthusiasm from our partners in Nepal against a continuing backdrop of political uncertainties. Equipment and vehicles are in place and a good working relationship has developed between ZSL and NTNC/DNPWC. Significant progress has been made already.

2. Give details of any notable problems or unexpected developments that the project has encountered over the last 6 months. Explain what impact these could have on the project and whether the changes will affect the budget and timetable of project activities. The Maoists withdrew from parliament during this period and the Minister Responsible for Environment and Wildlife was one of the absentees and the post remains vacant which has complicated the working of the DNPWC. The project has come at a critical time and is opportune as there is ongoing poaching pressure which if anything is intensifying and the Army staff and partners are still ill-equipped to deal with the situation. Every investment from the DI is improving the potential to resolve these problems.

IUCN were not able to respond in a timely fashion to the establishment of TORs and a work plan so the steering committee agreed to change strategy on the public engagement and a consultant has been brought in to look at a programme and local activities have been initiated through the NTNC and reported above. This should not affect the outputs planned.

Have any of these issues been discussed with the Darwin Secretariat and if so, have changes been made to the original agreement?

No.

Discussed with the DI Secretariat:

Changes to the project schedule/workplan:

o	
3. Are there any other issues you wish to raise relating to the project or to Darwin's management, monitoring, or financial procedures?	No

Annex - 1

Technical Report on

Status Monitoring of Greater One-horned Rhinoceros in Bardia National Park, Nepal

Government of Nepal
Department of National Parks and Wildlife Conservation
Bardia National Park

In Collaboration with
National Trust for Nature Conservation
WWF Nepal Program
IUCN
Zoological Society of London - Darwin Initiative
May 2007

Acknowledgements

Bardia National Park appreciates the contribution of the conservation partners - National Trust for Nature Conservation, WWF Nepal Program, IUCN, Zoological Society of London (ZSL) and Darwin Initiative (DI) of the UK Government - to conduct status monitoring of rhino population in Bardia National Park. WWF Nepal Program and DI/ZSL through NTNC provided financial support to accomplish the task. We are also thankful to Ranaser Gan of Nepal Army, Nature Guide Association of Bardia and Tiger Tops Lodge of Bardia for their assistance.

Members of the technical committee and taskforce team are thanked for their efforts to make the count successful. In this regards, we especially extend our thanks to Mr. K. C. Poudel, Director General of DNPWC, Mr. Shyam Bajimaya Chief Ecologist of DNPWC, Mr. Gopal Prasad Upadhaya, coordinator of the count, Dr. Shant R. Jnawali, rhino expert of NTNC, Dr. Rajan Amin, scientist from ZSL for their continuous support, involvement and encouragements. We would like to thank all the members of technical team, *hattisar* staffs (BNP, NTNC/BCP, and Tiger Tops) for their contribution. We are grateful to all the individuals and organizations who directly or indirectly supported rhino count 2007.

Special thank goes to Dr. Shant R. Jnawali and Mr. Naresh Subedi of NTNC for preparing this report. I do also like to extend my heartfelt thanks to Dr. Richard Kock and Dr. Rajan Amin of ZSL for reviewing the draft and providing constructive comments.

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Bardia National Park

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1. Introduction

The greater one-horned rhinoceros *Rhinoceros unicornis* (hereafter referred to as rhinoceros) are now confined in small isolated pockets of protected areas in India and Nepal. The Kaziranga National Park (NP) in India holds the largest population of *ca* 1850 individuals. In Nepal, rhinoceros are found in Chitwan NP in mid lowland region and in Bardia NP and Suklaphanta Wildlife Reserve (WR) in the western and far western lowland regions, respectively where they were re-introduced between 1986 and 2003. The rhinoceros population in Nepal has drastically declined in recent years as a result of intense poaching following the removal of many of the army anti-poaching units from the parks. A recent census (2005) identified only 372 individuals in Chitwan NP, representing a 31% decrease since 2000.

Following the sharp decline recorded in the rhino population in Chitwan NP, there was an urgent need to determine the status of a newly established population in Bardia NP. In Bardia NP, 83 individual rhinos were released in the Karnali floodplain (13) and Babai valley (70) between 1986 and 2003. The Department of National Parks and Wildlife Conservation (DNPWC) in collaboration with National Trust for Nature Conservation (NTNC), WWF Nepal Program, IUCN and the Zoological Society of London (ZSL) undertook a rhinoceros status monitoring exercise in May 2007. Financial support for the exercise was provided by the UK Government Darwin Initiative through ZSL and WWF Nepal Program.

This report describes the ecological setup of Bardia NP, objectives of status monitoring, methodology, results and recommendations to improve monitoring and law enforcement.

1.1 Bardia National Park

Bardia NP (81º 20' E and 28º 35' N) lies in the western lowland of Nepal in the districts of Bardia, Banke and Surkhet. The protected area was established in 1976 as Royal Karnali Wildlife Reserve with an area of 368 km² to protect the unique biodiversity of

Karnali floodplain. In 1988 the Reserve was extended to the east to include the Babai valley and designated a National Park. The park currently covers an area of 968 km^2.

The park is well known for its rich biodiversity. The vegetation in the park ranges from early succession stage tall grasslands to climax stage Sal *Shorea robusta* dominated forest established in dry upland areas. Over 70% of the park area is dominated by Sal forest. Other vegetation types in the park consist of Khair *Acacia catechu* and Sissoo *Dalbergia sissoo* association, wooded grasslands; phanta (previously cultivated fields). Tall floodplain grasslands dominated by *Saccharum spontaneum, S. bengalensis*, *Arundo donex*, *Narenga porphyrocoma*, *Phragmites karka* are the most preferred habitats by rhinoceros.

Bardia NP provides refuge for over 53 species of mammals, about 400 species of birds, 121 species of fishes and 25 species of reptiles. Royal Bengal tiger, Asian wild elephant, greater one horned rhinoceros, swamp deer are among the protected species found in the park.

1.2 Overview of Rhino Status in Nepal

Rhino population in Nepal was estimated to be about 800 individuals in early 1950s. The population was confined to Chitwan valley. The rhinoceros and other wildlife populations were protected by the then ruling Rana regime. Also the malaria prevelant in the area also served as barrier against people who wanted to move into the valley for cultivation. The Rana regime came to an end in 1950 and malaria was eradicated in mid 1950s. This opened up the area and over hundreds of thousand people moved from mid hills and started to clear up potential rhino habitat for cultivation. Besides habitat loss, rampant poaching caused a sharp decline in rhinoceros numbers. As early as in mid 1960s, the rhinoceros population was estimated at less than 100 individuals (Spillet and Tamang 1966). Realizing the sharp decline in rhino population, the then His Majesty's Government declared the remaining forests and grasslands along Rapti, Rew and Narayani rivers as a National Park and later expanded to its present size of 932 km^2. The overall management responsibility was delegated to the newly created Department of

National Parks and Wildlife Conservation (DNPWC) and Nepal Army was deployed later in 1976 to assist DNPWC to strictly protect the remaining habitats and the wildlife including the rhinoceros.

The combined effort of DNPWC and Nepal Army resulted in an increase in rhino numbers. By 1988, the rhinoceros population was estimated to have reached to a total of 358 individuals (Dinerstein and Price 1991). Later in 1994, DNPWC in collaboration with Resources Nepal, NTNC and WWF launched a Count Rhino Program in Chitwan NP and estimated a population size of 466 individuals. The 2000 Rhino Count in Chitwan revealed a total of 544 individuals.

The armed conflicts that occurred over the past decade caused a massive loss in faunal diversity. The security posts stationed strategically along protected area boundaries had to be pulled back to the headquarters due to security reasons creating security vacuums in almost all park and reserve areas. Rhino population again suffered to uncontrolled poaching. Between 2000 and 2005, over 170 rhinos were lost in Chitwan (DNPWC 2005).

In order to safeguard the isolated Chitwan population from demographic/stochastic events, and natural calamities, a total of 87 individuals of different sex and age classes were captured from Chitwan NP and reintroduced into Bardia NP (83) and in Suklaphanta WR (4) between 1986 and 2003. The Bardia population also got affected adversely during the armed conflict.

2. Objectives

Ministry of Forest and Soil Conservation has given very high priority to conserve rhinoceros and their habitats particularly after the significant decline in rhino numbers in recent years. A national Rhino Conservation Action Plan (RCAP) was endorsed by the government. The status monitoring of Bardia rhino population is in line with RCAP. The main objectives of status monitoring in Bardia were to:

- determine the status and distribution of rhinos in and around BNP

- assess the level of poaching threat on the remaining population of rhino (in combination with intelligence data),
- use the census information to develop and implement an effective strategy for the security and monitoring of the remaining rhinoceros in Bardia NP.

3. Methods

The Department of National Parks and Wildlife Conservation coordinated the overall exercise. In order to smoothly conduct the monitoring exercise, two coordination committees, one at the central level and another at the field level were formed. The central level committee consisted of Mr. Gopal Upadhaya (coordinator), Dr. Shant Raj Jnawali (technical advisor), Santosh Gurung from WWF and Mr. Dipendra Joshi from IUCN. Representative from ZSL, Dr. Rajan joined the team later. The field level committee was composed of Chief Warden, Mr. Fanindra Kharel (field level coordinator), Mr. Naresh Subedi, Office In-charge of NTNC's Bardia Conservation Program and Mr. Ganga Ram Singh, TAL's field program coordinator. Technical staff from Bardia NP, NTNC's Bardia and Suklaphanta Conservation Programs, WWF Nepal Program and naturalists from Nature Guide Association, Bardia served as observers in the count.

The census technique used to estimate the rhinoceros population size and structure of Bardia NP was based on the methodology developed by Laurie (1982) and Dinerstein and Price (1991). This method has already been proven to be reliable and practical for estimating the population size, age and sex structures, and distribution pattern of rhinoceros. In order to avoid duplication during the count, all potential rhinoceros habitats in Karnali floodplain, Babai valley and nearby forest areas were divided into blocks. Based on physical demarcation, the Karnali floodplain was divided into 7 blocks as shown in Figure 1. Similarly, Babai valley was divided into three blocks as shown in Figure 2.

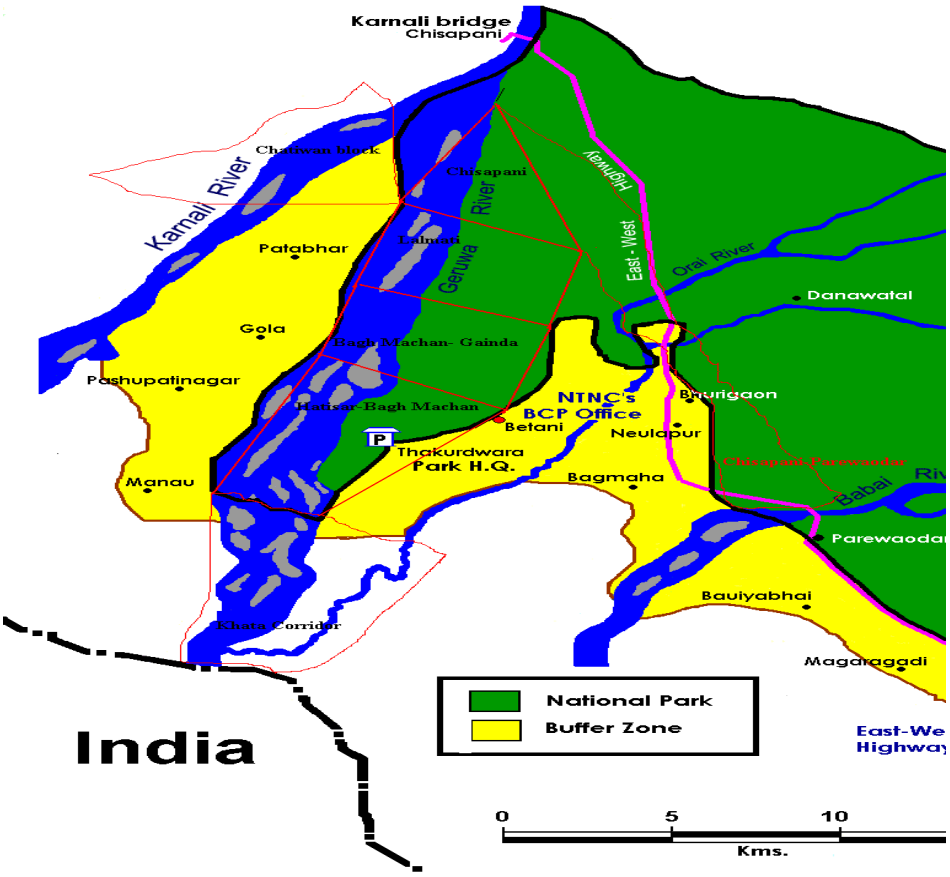

Figure 1: The survey blocks in Karnali flood plain: 1: Bardia - Katarnia forest corridor (outside NP); 2: Hattisar – Lamkighagar; 3: Lamkighagar - Gainda Machan; 4: Gainda Machan – Lalmati; 5: Chhatiwan community forest of Kailali and nearby forest area; 6: Chisapani; 7: Chisapani- Parewa Odar

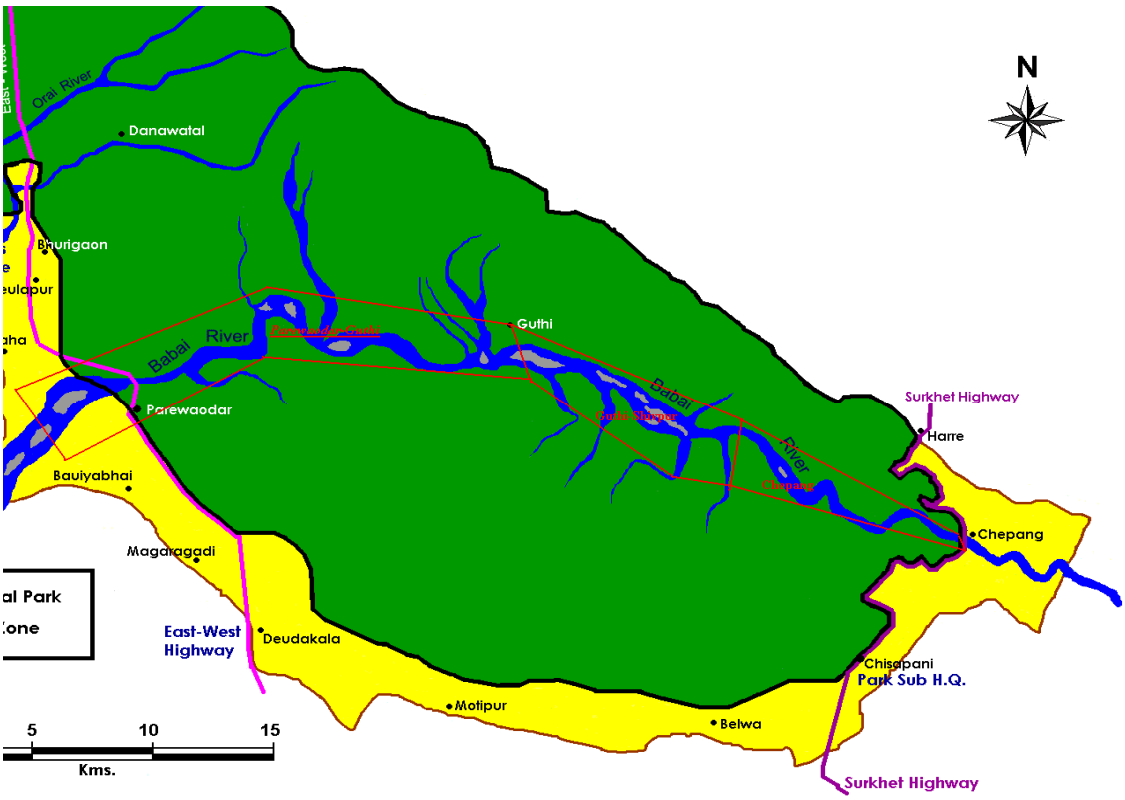

Figure 2: The survey blocks in Babai valley: 1: Parewaodar – Guthi; 2: Guthi – Shivpur; 3) Shivpur - Chepang.

A total of 13 domestic elephants were used over a period of 14 census days. The blocks were marked on a topographic map (scale 1:10000) and a reconnaissance survey was conducted before the actual count. .The census was conducted in May after tall grasslands were cut and burnt. This allowed the greatest degree of visibility to observe animals in the grassland areas. Elephants were lined up and moved parallel along transects marked on the map to sweep individual blocks. The distance between two elephants was maintained at 25 – 50 m in dense forests and 100 - 200 m in open grasslands. Each elephant carried 1 – 2 well trained observers; over 80% of the observers had experiences from previous counts. Sweeping time for individual blocks ranged from 5 to 10 hours depending on vegetation types. Blocks consisting of riverine and Khair - Sissoo forests with dense under story including lianas always took longer time to survey. A total of 1,450 elephant hours were spent surveying all 7 blocks. A team of 85 persons

including biologists, observers, elephant staffs, kitchen staffs and logistic crew were mobilized throughout the survey period.

Rhino sightings were recorded on data sheets designed and used in the previous 2005 count. The sighting recording sheet consisted of the following fields: observer's name, sighting location, date, time, age class (adult, sub adult or calf), sex (male, female or unidentified sex), habitat (open grasslands, tall grasslands, wooded grasslands, Khair - Sissoo forest, mixed riverine forest or other), distinct rhino identification features identification features (shape and size of the horn, cuts in ears, body and neck folds, special markings on the body etc).

The observers used (8 x 42) Pentex binoculars for observation. Wherever possible, GPS locations were also recorded and transferred to topographic maps.

The individual rhinos were identified using a range of features: shape and size of horn, folds on the neck and rump, distinct body markings (cuts, scars, skin lobes) and other characteristics features on both flanks of the body. At the end of the day all the observers cross checked their observations with observers sitting on elephant of either side to avoid double counting. The final list was then tabulated for each day and for individual blocks.

4. Results and Discussion

4.1 Status and Distribution

The census revealed a total of 30 rhinoceros in natural habitat, all in Karnali floodplain and 1 captive orphan rhino at Park Headquarters. Of 31 rhinos, 7 were males, 11 females and 13 were unsexed (Table 1). The age structure of the recorded animals was composed of 18 adults, 6 sub-adults and 7 calves.

Table 1. Age, sex and distribution of Bardia rhinoceros population in BNP, May 2007.

Census Blocks	Rhino population									Total
	Adult			Sub-adult			Calf			
	M	F	UN	M	F	UN	M	F	UN	
Hatisar – Lamkighagar (KFP)	1	4	1						3	9
Lamkighagar – Gainda Machan (KFP)	1	3	1	1	1	1			2	10
Gainda Machan – Lalmati (KFP)	3	2	2		1	1			2	11
Orphan at Park hq.				1						1
Total	**5**	**9**	**4**	**2**	**2**	**2**			**7**	**31**

Note: M - male, F - female, UNI - sex unidentified, KFP – Karnali Flood Plain,

Authorities from Katarniaghat Wildlife Sanctuary (WS), India reported the presence of 5 individual rhinoceros in floodplain of the sanctuary at the time status monitoring was launched in Bardia NP (Table 2). A narrow strip of forest corridor (about 13 km) along the Geruwa River connects Bardia NP with Katarniaghat WS and allows safe movement of a range of wildlife species, particularly rhinos, elephants and tigers between these two protected areas. Taking the individuals reported from Katarniaghat into account, the rhino population in Bardia-Katarnia landscape is 36 individuals at the end of May 2007.

Table 2. Age and sex of rhinoceros reported sighted in Katarniaghat Wildlife Sanctuary (pers. communication).

Area	Adult			Sub-adult			Calf			Total
	M	F	UN	M	F	UN	M	F	UN	
Rhino in Katarniaghat Sanctuary, India	2	2							1	5
Total	**2**	**2**							**1**	**5**

Note: M - male, F - female, UN - sex unidentified.

A total of 70 individual rhinoceros were released in Babai valley and 13 in Karnali floodplain between 1986 and 2003. The present count revealed only 30 individual in Karnali floodplain. No sightings, direct or indirect (dung, spoor etc), were reported from Babai Valley.

In Karnali floodplain, highest numbers (34 %) of rhinoceros were recorded in the tall floodplain grasslands dominated by *Saccharum spontaniu,S. bengalensis* and *Arundo donex*, 26 % in the mixed hardwood forest dominated by *Trewia nudiflora, Syzygium cumini, Ehretia laevis* and *Adina cordifolia*, 23 % in the *Acacia catechu* - *Dalbergia sissoo* association and 17 % in the wooded grasslands.

Drastic reduction in rhino numbers since 2000 has become a serious concern to the park management. Absence of rhinoceros in Babai valley is attributed to high poaching with some deaths due to natural causes during the armed conflict prevailed throughout the country. Security in the Babai valley collapsed since 2002 after the withdrawal of Guthi, Parwaodar, Kalinara, Danavtal and Asneri security (Nepal army) posts. Similarly, park posts were also closed due to security reason. This created a great security vacuum in the valley allowing poachers to overtly carry out poaching of rhinoceros and other coexisting wildlife species. Carcasses of dead rhinoceros of all age groups were observed during the sweeping operation. Since the 2000 count, a total of 16 rhinos were reported poached in Babai valley and 3 in Karnali floodplain. No effective patrolling was possible between 2004 and 2006.

Furthermore, severe flooding that frequently occurs during the monsoon season may also have affected the rhino population in the valley. Four rhinoceros were reported to have been washed away during the Monsoon floods of 2006 (BNP 2006).

4.2 Current Efforts

The Department of National Parks and Wildlife Conservation together with concerned conservation partners has intensified effective measures to halt poaching and other illegal activities in poaching prone areas. Security posts are being re-established in strategic locations and joint patrols has been initiated by the army and the park. So far, security posts in Guthi, Parewaodar, Sainawar, Dhakela and Ambasa have been re-established and adequate numbers of security personnel and park game scouts have been deployed. As a result, no rhinoceros poaching has been reported since the beginning of 2007. However,

significant poaching pressure remains. A total of 8 poachers, all equipped with 8 home made guns were arrested in Babai valley during February-June 2007. Similarly, over 75 metal wire snares targeted to trap medium sized ungulates (spotted deer, hog deer, sambar deer etc) were collected from the Karnali floodplain in between February to March 2007. A group of 5 rhino poachers were sighted during a night patrolling in June; firearms were recovered. A number of poisoning cases were also recorded from the core areas of the park. Furthermore, 4 poachers engaged in hunting porcupines and spotted deer were arrested from Babai valley during the 2007 count and were later sent to the jail. Concerted effort is therefore required to protect the wildlife of Bardia NP.

5. Recommendations

The following recommendations are made:

- Strengthen existing anti-poaching units to halt poaching of rhinoceros and other wildlife.
- Intensify regular monitoring of remaining individuals in the Karnali floodplain.
- Establish an integrated standardized monitoring system to provide the necessary information for effective protection and management of the rhinoceros and their habitat;
- Strengthen and increase the capacity of the park officers, patrol scouts and communities particularly in monitoring and surveillance of rhino and in anti-poaching; implement modularized on site training program.
- Equip field patrol staff with the necessary monitoring equipment (GPS, binoculars, sighting forms and maps)
- Provide patrol teams with necessary transport (rubber boats) and camping equipment to conduct effective patrol and surveillance.
- Implement a system for strict data quality control; setup and maintain Master ID files containing profile/photographic records of individual animals.
- Setup a reporting system based on a rhinoceros GIS database system.
- Develop a system for effective reporting and communication among people directly involved in monitoring.

- Improve public engagement and integration of local communities, politicians and other stakeholders in rhinoceros conservation efforts and facilitate improved governance of rhino conservation.

The Darwin project through the DNPWC-NTNC and ZSL is addressing many of these issues.

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Annex - 2

List of equipment purchased:

Computer (desktop)	2 units
Computer (laptop)	3 units
LCD projector	1 unit
Tata truck	1 unit
Printer	1 unit