
RHINO CONSERVATION ACTION PLAN FOR NEPAL
DEPARTMENT OF NATIONAL PARKS AND WILDLIFE CONSERVATION, HMG

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RHINO ACTION PLAN IN ROYAL CHITWAN NATIONAL PARK

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RHINO ACTION PLAN IN ROYAL CHITWAN NATIONAL PARK

1 INTRODUCTION

Historically, One-horned Asian Rhino (*Rhinoceros unicornis*) ranged throughout the plains of Ganges and Brahmaputra in south Asia. Its range decreased tremendously resulting in distinct meta-populations because of the disappearance of suitable rhino habitats. At present, the Asian rhino populations in wild are found in protected areas of Nepal and India.

1.1 Status of Rhino in Chitwan

In Nepal, prior to the malaria eradication and subsequent massive migration of hill people in the 1950s, the rhino population in the Chitwan valley alone was estimated at 1000. The rhino population decimated, counting only about 60-80 animals in 1962 by virtue of forest clearance for agriculture and heavy poaching. With the establishment of "Gainda Gasti" or Rhino Patrol Unit in 1961, and then later, the Royal Chitwan National Park in 1973, the rhino population was again on the increase reaching up to 270-310 individuals by 1975 (Laurie, 1978). rhino counting in 1994 estimates the rhino population

in the Royal Chitwan National Park (RCNP) between 446 and 466. The rhino population in the RCNP is growing at the rate of 3.7 % (Yonzon, 1994). There are rhino outside the RCNP such as Tikauli. The increase in rhino population at the present numbers clearly indicates that with protection and availability of habitat the population can quickly rebound. Various studies suggest that the Chitwan rhino population will continue to grow.

1.2 Rhino Habitat

The Narayau and Rapti Rivers have a remarkable influence on the soil of the RCNP. Recent flood plains of these rivers are quickly dominated by *Saccharum spontaneum* (Lehmkul, 1989). Flood plain grasslands dominated by 4-6 m tall *Saccharum spontaneum* are the most critical rhino habitat (Dinerstein and Price, 1991). Grasslands interspersed with patches of riverine forests together make about 30 % of the park area and are composed of *Saccharum* sps., *Narenga* sps., and *Themeda* sps. This grass species is the fundamental food resource comprising more than 50 % of the rhino diet. Sal (*Shorea robusta*) forest associated with species such as *Dillenia pentagyna*, *Syzigium cumini*, *Trijuga oleofera*, *Lagerstroemia parviflora*, *Terminalia tomentosa*, *T. belleric*, *Phyllanthus emblica* comprise 70% of the Park and are seldom used by rhino. Rhino and *Saccharum spontaneum* densities are positively correlated (DNPWC, 1993).

Inundation by regular flooding of the alluvial plains along major rivers in the RCNP creates favorable conditions for quick appearance of sprouts and germination to maintain the dominance of *Saccharum spontaneum*. Therefore, the monsoon flood is very critical for the maintenance of rhino habitat in Chitwan.

Oxbow lakes and other open water bodies are also very critical for rhino. A rhino spends about 8 hours/day in wallows or streams during period of high humidity (August-September). Except December and January, a rhino spends at least 1 hour/day wallowing.

2 ACTION PLAN

2.1 Habitat Improvement

Considering the rate of increase in the rhino population in the RCNP, it is apparent that the rhino population is likely to increase with the availability of the suitable rhino habitats and protection. Various studies suggest that at present, the rhino habitat in the RCNP is under-utilized. However, the grazing pressure from the livestock has rendered many ideal habitats literally unsuitable for rhino. This has ensured the food competition between the livestock and rhino leading to increased crop depredation in surrounding areas. This also poses a risk of transmission of disease.

With the present population growth rate of 3.7 % , the carrying capacity of the Park for rhino is likely to be exceeded in the future. This may lead to various environmental catastrophes resulting into decline in population and genetic viability. We need to be prepared to address such issues in future. To begin with, it is important to assess the carrying capacity of the Park so that necessary measures can be taken in time.

To avoid such instances, it is necessary to improve the quality of existing habitats so that it can sustain a viable population to its full capacity. Although, it is considered agreeable to let nature take its own course, certain manipulation is necessary depending on the target species. For example, control on natural succession of flood plain grassland to a woodland would be necessary to maintain populations of species such as rhino. Habitat improvement through weed elimination and planting with indigenous grass species preferred by rhino such as *Saccharum spontaneum* should be done. Flood plain grasslands and riverine forests bordering the Rapti, Narayani, Reu, Dhungre, and Icharni Rivers contain the highest density of rhino in Chitwan. Several prime rhino habitats in the Park are taken over by unpalatable grass species, weeds (*Pogostemon* ssp., *Eupatorium* ssp. Etc.), and tree species such as Simal (*Bombax ceiba*), Sissoo (*Dalbergia sissoo*), Khair (*Acacza catechu*), etc. Subsequently making them less suitable for rhino.

Uprooting of the weeds and tree species or regular grass cutting so as to suppress their growth is likely to improve the rhino habitat. Prime rhino habitat particularly, the Icharnee Tappu, Jaya Mangala Ghol, Duniariya, and Kachhuwani require urgent attention. Flood plain in the RCNP is very dynamic and is dependent on the course of the river. It is necessary to study the change in grassland ecology due to the change in river course.

Fire line (at least 2.5 m wide) in the grassland should be developed with narrow opening on either side (to avoid vehicular traffic) for a controlled burning. This will help to survive many grassland dependent fauna during the burning season in addition to rhino as another part of the grassland across the fire line will not be under fire.

Wetland is very important for rhino to avoid heat stress and meeting nutritional requirements. Maintenance of open water is equally important in maintaining the rhino habitat as the flood plain grasslands. Improvement of wetlands through desolation, control on invasion by undesirable aquatic vegetation, and regular removal of water hyacinth are important. Rehabilitation of Jaya Mangala Ghol by improving the water source to ensure regular water supply and controlling drainage points should be done. Decrease in water level in Rapti during the dry period of the year as a result of East Rapti Irrigation Project may have long term impact on the survival of rhino protection of which is the prime reason for the establishment of the RCNP.

2.2 Control on Livestock Grazing and Crop Depredation

Livestock grazing is increasingly putting pressure on the rhino population through food competition. In addition, this poses a threat to the health of wildlife in general, with a potential risk of transmission of disease.

Livestock grazing in the park area and crop depredation by rhino are positively correlated. Incidence of crop damage by rhino in the fringe areas of the Park has been rising in recent years. This is primarily because of the agricultural farming in former rhino habitat and displacement of rhino as a result of increased livestock grazing. These are some of the major issues of park and people dissension.

Livestock grazing in the Park can be possibly reduced by implementing veterinary facilities to the local people and extension programs to furnish alternatives to free ranging cattle grazing. An extension package should be incorporated with the vet facilities to encourage the local farmers to rear improved HYV (High Yielding Variety) of livestock and stall feedings. Such animals are largely for agricultural purposes and dairy production. There are a large number of unproductive cattle that are being raised because of the religious beliefs and their real output is only the farm manure. Discouraging farmers from raising such unproductive animals and gradually eliminating them from the fringe areas and stall feeding of cattle are crucial to reduce the grazing pressure in the Park. However, the effectiveness of any approach to achieve this goal which means a change in tradition is likely to take long time. Stall feeding will help farmers for the operating of bio-gas which will reduce local pressure on the Park for firewood. Long-term sustainability of such programs should be substantiated prior to implementation to avoid public resentments ensuing to the same old situation of conflict once the program terminates.

Silvi-pastoral plantation in the community land in the buffer area needs to be done to sustain the grazing and fodder needs of the livestock. Crop damage by the wild animals has been a serious issue that has been deteriorating the Park-people relationship among others. Past efforts of fencing and trenching in order to control crop damage have been very expensive to maintain. Therefore, various community development activities as has been planned once the buffer zone management starts, may help create positive image about the parks among the local community. This is likely to create a cooperative environment for the conservation and management of wild animals.

2.3 Rehabilitation of Rhino Habitat

Rehabilitation of Padampur Village elsewhere and development of a habitat suitable to rhino in that area is likely to sustain increasing population of rhino in the RCNP. In addition people of Padampur are also interested to be resettled somewhere else because of the existing problems such as crop

damage, firewood and grazing land crisis and reach of annual flood. The rehabilitation of this village will greatly facilitate the Park management in undertaking various conservation activities. Present location of Padampur has been creating several technical difficulties in park management. Development of rhino habitat in Padampur area, once it is rehabilitated, however, needs a study to explore the possibility of creating a habitat suitable for rhino. This is important to note here that all grassland is not necessarily suitable for rhino. Certain manipulations are required in order to make a habitat suitable for rhino. A rhino habitat can be developed in the areas by encouraging the growth of preferred grass species such as *Saccharum spontaneous* and others. Planting of this species can also be done if they fail to grow in the area. Although both the majority of the people of Padampur Village and the Park management conform the rehabilitation, each having their own interest, a strong political commitment is necessary for its realization. Such a rehabilitation program should be settled by a special commission that includes representatives from a wider sector of the society and from the Department of National Parks and Wildlife Conservation. This will be a special project in itself.

It is important to note that rhino also inhabit forest areas outside the RCNP, particularly the Tikauli forest. These forest areas also need to be managed and protected for the rhino conservation. It is preferable that these forest areas are included in the Park area with gazettelement rather than just making this as buffer zone.

2.4 Translocation/Reintroduction

Thirty-eight rhinos were translocated from the RCNP to the Royal Bardia National Park in 1986/88 and 1991. It will be too early to infer that the translocated rhinos in the RBNP have adapted to the new environment, however, there are some indications that the population is doing well. Considering the historical range of rhino (all throughout the Gangetic plain) the possibility of translocating some individuals to other protected areas needs to be explored. However, there are only two protected areas. Namely, Royal Bardia NP (RBNP) and Royal Suklaphanta Wildlife Reserve that can sustain a reintroduced rhino population. Nevertheless, considering the past experience of rhino reintroduction in the RBNP, it is highly recommended that a detail study of the proposed site for the reintroduction should be done beforehand. It is very important that the study should include the possible crop damage issue resulting from the translocated rhino population.

2.5 Translocating Within the RCNP Toward Madi (south)

The rhino population is concentrated in the northern boundary of the RCNP particularly in Sauraha, Went Rapti Narayani, and Bandar Jhoola areas. The population may disperse naturally to the southern parts of the Park across Surung once the population reaches the level of carrying capacity in the north. A study to explore the availability of suitable rhino habitat in other areas particularly in the southern parts of the Park needs to be conducted. If suitable habitat exists, what is the limiting factor for the dispersal of rhino population in these areas would be another question to be studied. Translocation of some individuals within the Park is suggested depending on the availability of suitable rhino habitats in other parts. However, it is strongly suggested to have the public reaction before such project is launched.

Considering close location of Madi area with the Nepal - Indian international border and susceptibility of increased poaching, a strong and regular surveillance and monitoring are required in the Madi area if the rhino population ever extends to this area.

2.6 Strengthening Anti-poaching Capability

At the beginning of the Park establishment, in addition to the Rhino Patrol Guard which was primarily, responsible to control poaching outside the Park, an anti-poaching unit was established in cooperation with Flora and Fauna Preservation Society to curb escalating rhino poaching. Poaching took a toll of 20 % (21.8) of the total rhino deaths (109) in 18 years (1973-1991). In average 1.21 rhino per year were killed by poachers in those years. Poaching reached its height in 1992, an all time record when

9 rhinos were found killed by poachers in one year. This escalation in poaching is attributed to the recent surge in the smuggling of rhino horns out of the country into the South-East Asian markets.

Considering such spurring poaching activity, an anti-poaching unit has been constituted once again with the support from World Wildlife Fund and International Trust for Nature Conservation. The strategy of the Unit is to work in close collaboration with local people who work as secret informants to the Park management in order to apprehend the poachers. Arrest of a number of poacher every year indicates that once again, this system works effectively in curbing the poaching intensity. In January 1993, 11 poacher were arrested. Efficiency of these units are restricted due to the inadequacy of equipment such as vehicles, portable communication equipment, and necessary fire arms. Rhino poaching is likely to be controlled by strengthening the Anti Poaching Unit by allocation of adequate staff, fund, and equipment.

The Park awards to the village informants up to the amount of Rs. 50,000 and the penalties for poaching rhino are 5 to 15 years of imprisonment with a fine of Rs. 50,000 to 100,000. Despite such severe penalties and efforts, occasional poachings are still reported. This indicates that stringent laws alone are not sufficient in curbing the poaching of endangered wildlife species. Cooperation of local people living adjacent to the protected areas is the key to achieving success in such issues. However, cooperation from the local people can be expected only when they see some direct benefit to them from the protection of wildlife species. The recent amendment of the Buffer Zone Act to channel 30 to 50% of the Park revenue into local development may develop some positive attitudes in the local community.

It is also necessary to explore the possibility of imposing stringent trade restrictions and surveillance at the major custom posts in Nepal. CITES Implementation Workshops similar to the one held in 1995 in Kathmandu should be held frequently to make various agencies such as police, custom, forest, administrators, journalists, etc. understand and help to implement effective trade control as per CITES requirements. Trans-boundary collaboration to implement CITES regulation with neighbouring countries will provide additional opportunities to curb poaching activities and the illegal trade of endangered wildlife.

2.7 Loan to International Agencies for Scientific Studies.

Rhinos have always been in high demand in zoos and research stations of several countries. A number of rhinos were provided to various agencies in the past.

Until Count Rhino '94, we weren't sure about the exact population of rhino in the RCNP and hence, we were reluctant to grant any of the requests for rhino by international agencies. Results from Count Rhino '94 reveals that the rhino population is increasing in the RCNP. In such circumstances, providing a few individuals to international organizations, strictly for research purposes is unlikely to have a negative impact on the source population. However, to avoid controversy, all the terms of such exchanges should be transparent and necessary CITES regulations should be followed. Funding support, if any, arising from such exchanges should be strictly applied to the rhino conservation efforts. The recovery process of such loans should be clearly defined before the exchange is ever made. This is still a very sensitive issue and therefore, every precaution should be observed so as to avoid controversy.

2.8 Population Monitoring

To transpire a scientific basis for rhino conservation and management, a long term monitoring program should be initiated to assess numbers, population trend, ecological requirements, carrying capacity, and people/rhino conflicts (DNPWC, 1993). A rhino census similar to Count Rhino'94 is suggested every 5 years to assess the population trends and status.

Carrying Capacity

A study to assess the rhino carrying capacity of the Park should be conducted. Since the establishment of the RCNP, 109 rhino deaths have been reported (DNPWC, 1993). Natural death constituted about 80 % of the total deaths and 20 % from poaching in 18 years (1973-1991). Recently, frequency of injured rhinos and the rate of crop damage are on the rise. This is possibly because the present rhino population is beyond the carrying capacity. Some studies suggest that the rhino habitat in the RCNP at present is under-utilized. It is argued that the high injury rate and crop damage at present is the result of displacement of rhinos by the livestock. Livestock grazing in the rhino habitat in the Park has become widespread.

2.9 Conservation Education

Conservation awareness programs need to be actively launched in the area in cooperation with the local NGOs and institutions and various other relevant organizations. Conservation education through radio, TV, audio-visual arrangements at the local level, posters, papers, bill-boards, Visitor Center, etc., need to be activated. CITES status of the rhino, fines and punishments, rewards to the informers, and other relevant information should be furnished simultaneously to the local people.

2.10 Income Generation Activities

Cooperation from the local people can be realized only when they see the direct benefit from the existence of the Park and protection of wildlife. Most of the local people in the surrounding areas are subsistence farmers. They can not think of conservation of wildlife if their life-sustaining system is disrupted. At present, local people are realizing very little benefit directly from the tourism in the parks. They should be trained in hotel/lodge management, as tour operators and nature guides to accrue the benefit from tourism. If this can happen, they will put all their efforts in sustaining the income source, i.e., protection of wildlife.

Increase in the living standard of the local people will lead to reduction in pressure in the parks from several means. For example, firewood consumption will be reduced, number of livestock will be reduced, and moreover, they will be conscious about nature conservation.

2.11 Fund for Orphanage Center

It has been noticed that on average, every year, the Park has been raising one or two rescued, orphan rhino calves from the wild. Such calves are either abandoned by the mother or injured by some predators. Although, this is incidental, a regular fund needs to be set aside for necessary care and raising of such orphans in an orphanage center.

2.12 Training

To increase the efficiency of Park personnel in rhino conservation, specific training such as habitat improvement, population monitoring, anti-poaching, conservation education and extension, orphan rearing, etc. are necessary.

3 CONCLUSIONS

The Royal Chitwan National Park was established in 1973, primarily to protect the rhino population in Nepal. Until recently, this Park was the last stronghold of rhinos in Nepal. With the adequate protection and conservation measures, the rhino population has rebounded to about 600 individuals in the Park. The Park is likely to lose its fame in the world if the rhino population dwindles. Habitat improvement and rehabilitation, conservation education campaign, strengthening the anti-poaching unit, population monitoring are urgently needed to support the increasing rhino population. Strong conservation commitment (both political and technical) is required for the long term survival of the rhino in the RCNP.

Estimated Budget for rhino conservation (in \$ 1,000)

Habitat Improvement	200
Translocation/Reintroduction studies	20
Translocation of 40 rhino	100
Strengthening Anti-Poaching Unit	500
Population Monitoring and Census	50
Conservation Education	50
Income Generation Activities	55
Fund for Orphanage Center	25
Training	100
TOTAL	1,050

Rehabilitation of Prime Rhino Habitats

Resettlement of Padampur and Ram-Mauri Bhata \$ 1,000,000

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APPENDIX

(A) Baby Rhino Born in Royal Chitwan National Park (1998)

- i) Temple Tiger Area 11 Baby rhino with mother
- ii) Bandar Jhula Area 2 Baby rhino with mother
- iii) Bhimle Area 6 Baby rhino with mother
- iv) Bagmara Area 2 Baby rhino with mother
- v) Icherni Area 2 Baby rhino with mother

(B) Recent death

- i) One baby rhino female in Kasara and one baby rhino male in Jameli
- ii) One male, old rhino was killed at Benkatta near Sapan Khola due to fighting
- iii) One male, 16-18 year old, rhino was killed in Amaltari-Kujarli area due to fighting

Royal Chitwan National Park
Gaida Status

Year	Natural Death	Poaching	Killed by Tiger	Total
1973 to 1992	120	51	19	190
1993	8	7	3	18
1994	3	1	1	5
1995	6	-	1	7
1996	6		1	7
1997	1	-	1	2
1998	9	5	-	14
Total	153	64	26	243

HISTORY

- 1846 Chitwan valley declared as hunting reserve by Rana prime Minister Jung Bahadur
- 1911 King George V of England visited Chitwan for hunting. The hunting party bagged 38 rhino
- 1938 Lord Linlithgow, the Viceroy of India and his party bagged 38 rhinos in Chitwan
- 1950 Rhino population 800
- 1957 Rhino population 400
- 1959 Rhino population 300
- 1959 Rhino patrol or Gainda gasti was established
- 1960 Rhino population 200-225
- 1966 Rhino population 100
- 1973 Royal Chitwan National Park gazetted
- 1975 Rhino population 270-310
- 1986 4 rhino translocated to Duduwa National Park in exchange of 16 elephants
- 1986 13 rhino translocated to Royal Bardia National Park
- 1988 Rhino population estimated at 358
- 1990 25 rhino translocated to Royal Bardia National Park
- 1991 Anti poaching unit established
- 1994 Rhinoceros population estimated between 446-466
- 1996 Establishment of buffer zone
- 1998 Community veterinary health service clinic operational with the help of ZSL

