

## Efforts to conserve the Asian elephant in Nepal

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### Introduction

The land-locked kingdom of Nepal is situated along the southern Himalaya slopes, on the north-eastern frontier of India, between 80°15'E and 88°10'E and 26°20'N and 30°10'N. It is bounded on the north by Tibet (China), on the east by Sikkim and West Bengal (India), and on the south and west by the Indian States of Bihar and Uttar Pradesh. From east to west, Nepal is about 800km long, and has an area of 147,181km<sup>2</sup>.

Nepal contains some of the most rugged terrain in the world, 75% of which is mountainous. From south to north the country can be divided into four natural physical belts: (i) the *Terai* (the northern extension of the Gangetic Plains); (ii) the forested Churia foothills; (iii) mid-mountainous region; and (iv) the Great Himalaya Range, up to 8,848m.

Nepal has lost much of its forest and today, less than 15% of the land area is forested. The population is about 19 million, with an average density of 129 people/km<sup>2</sup>, but the fertile valleys support human populations at much higher densities. Nepal being an agricultural country, more than 90% of the population is engaged in agriculture, especially in the *Terai*. Nepal experiences a monsoonal climate, which varies with altitude. Major rivers such as Kosi, Gandak and Karnali flow southwards, and offer immense potential for hydroelectric power.

Vegetation and animal life varies with altitude. In the *Terai*, the most important tree is the sal (*Shorea robusta*), which provides hard and durable timber. Much of the central mountainous area is cultivated, but chir pine (*Pinus roxburghii*) is grown in patches. At higher elevations, the forest is dominated by oaks such as *Quercus lanuginosa*, *Q. semecarpifolia* and *Q. lameelosa* and rhododendrons. The *Terai* is rich in wildlife and is home to the Asian elephant (*Elephas maximus*), Great Indian one-horned rhinoceros (*Rhinoceros unicornis*), tiger (*Panthera tigris*), leopard (*Panthera pardus*), sloth bear (*Melursus ursinus*), gaur (*Bos gaurus*), water buffalo (*Bubalus bubalis*), spotted deer (*Axis axis*), sambar (*Cervus unicolor*) and swamp deer (*Cervus duvauceli*). The Government has set aside conservation areas for the protection of the country's rich and diverse fauna and flora. The Royal Chitwan National Park represents one of the last bastions of the Great Indian one-horned rhinoceros.

### Status of the elephant

As Olivier (1978) points out, it is likely that Nepal once had a population of elephants quite distinct from those in northern India. Elephants were once widely distributed in the lowland *Terai* of Nepal along the Indian border,

from Jhapa in the east and Mahakali in the west. They were particularly numerous in the area centred today on the Royal Chitwan National Park (Oldfield 1880). By the 20th century, the elephant population in Nepal began to decline gradually. Its present distribution represents just a fraction of its former extensive range (Fig. 1). About 50 years ago, much of the area known as the *Terai* at the foothills of the Himalaya in southern Nepal was covered by jungles unsuitable for human habitation due to malaria. These jungles were then home to such large mammals as elephant, rhinoceros, tiger, etc. However, the eradication of malaria in the 1950s resulted in a rapid influx of people from the hills and marked the beginning of the large-scale agricultural development (Santiapillai and Jackson 1990). The arrival of settlers from the north meant the destruction of over 80% of the natural habitat of the elephant and other large mammals (Mishra 1980). After 1950, forests were cleared to export logs to India, to increase food production, and to provide employment to the increasing human population. In the Chitwan Valley (one of the best habitats for elephant) alone, 65% of forest areas were converted for agricultural extension, between 1961 and 1977. One of the reasons for the decline of the elephant population in Nepal has been the use of elephants in Royal hunts. Up to 315 elephants were used for a single Royal hunt in Chitwan Valley in 1930.

Today, as a result of fragmentation of forests, the elephants are restricted to a few Protected Areas (PAs) namely, Royal Chitwan National Park, Parsa Wildlife Reserve, Royal Bardia National Park and Royal Suklaphanta Wildlife Reserve (Figure 18.1). However, elephants frequently move along the Siwalik corridor, Suklaphanta (Nepal)-Kisanpur (India) corridor, and Bardia (Nepal)-Katarniai (India) Corridor. Recently a herd elephants visited the Basanta corridor of Kailali (D. Rai pers. comm.). This is another corridor linked to the Dudhwa National Park, India. Similarly the Bardia elephant population has moved up to the Dang (proposed Royal Bardia National Park extension area). Today, between 106 and 172 elephants are estimated to occur in the wild in Nepal (Table 1), which represents almost a doubling of the number estimated in the 1980s by Santiapillai and Jackson (1990).

Figure 1. Distribution of elephants in Nepal

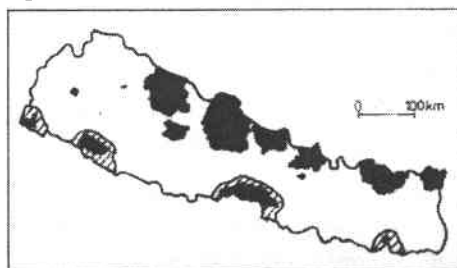


Table 1. Number and distribution of elephants in Nepal.

Population	Estimates		Remarks
	1990	2002	
Eastern	3	10-60	(1 in Koshi-Tappu WLR and 2 in Sunsari-Jhapa area). Today animals appear seasonally from West Bengal.
Central			
Royal Chitwan NP (= Thori-Sikaribas area)	10-15		
Parsa Wildlife Reserve NP	8-12	25	Parsa WLR NP is continuous with Chitwan. Elephants are residential.
Western	7-12	60+	Royal Bardia NP (residential)
Far western	5-30	11-27	Royal Suklaphanta WR (3 resident, rest migratory)
Total	33-72	106-172	

### Conservation efforts

#### *Establishment of a network of Protected Areas*

In order to conserve Nepal's rich biodiversity, His Majesty's Government (HMG) established the Department of National Parks and Wildlife Conservation (DNPWC) and created a network of PAs, covering 18% of the total area of the country. Of the 16 PAs, four are located within the elephant range. For the long-term goal of preserving Nepal's biological diversity, His Majesty's Government has established the Department of National Parks and Wildlife Conservation (DNPWC). The DNPWC has created a network of Protected Areas (PAs) that include eight national parks, four wildlife reserves, one hunting reserve, and three conservation areas, covering about 18% of the total area of the country. PAs located in lowland Terai are inhabited by several species of large mammals including the elephant.

#### *Habitat extension*

Even after the creation of PAs, adjoining potential habitats of endangered species were included in PAs by area extension of the Royal Chitwan National Park, the Royal Bardia National Park, and the Royal Suklaphanta Wildlife Reserve. The major PAs supporting elephants were extended in area. The area of Royal Bardia National Park was increased from 340km<sup>2</sup> to 932km<sup>2</sup> in 1984. It has been proposed to further extend the area of this park by about 900km<sup>2</sup> to the east. Similarly the area of the Suklaphanta Wildlife Reserve was increased from 155km<sup>2</sup> to 305 km<sup>2</sup> in 1997.

#### *Buffer zone*

The concept of buffer zone has been adopted in order to manage the peripheral resources to meet the daily

needs of the local communities and channel back 50% of the revenue accrued from the PAs to improve the socio-economic conditions of the local people. This provision has highlighted the direct benefit of the PA to the local community and a long-term conservation of biodiversity resources through government-community partnership. These initiatives have been taken as indirect compensation for the negative impacts of PAs. Buffer zone programmes have helped minimize park-people conflict, improve the resource base in the surroundings, create alternative sources of energy, provide several livelihood options, and create conservation awareness (Budhathoki 2004).

Local communities have been involved in the protection, use, and management of forest resources in the buffer zone. As a result, the status of many forested areas in the buffer zone has improved, thereby providing additional habitat for many species including the elephant.

#### *Forest corridors*

In areas where forests are fragmented, a system of forest corridors will help establish connectivity between isolated elephant populations (Sukumar 2003). The Department of National Parks and Wildlife Conservation (DNPWC) with the support of its conservation partners, such as the WWF-Nepal Program, GEF/UNDP is committed to the establishment of such forest corridors in order to enhance the passage of elephants across a fragmented landscape. The Terai Arc Landscape (TAL) is a new initiative undertaken by HMG, with support of WWF, to conserve and manage the entire ecosystem of Terai. The TAL area is endowed with rich and varied biodiversity. The TAL area includes most of the elephant range in the country. Conservation and management of this area will greatly help the elephant and other large mammals. The necessity for a trans-border cooperation

between Nepal and India has been recognized and dialogues have been initiated for the conservation of migratory megaherbivores.

#### *Minimizing wildlife damage*

**Physical barriers:** Wildlife watchtowers, trenches, fences, electric fences and scaring devices are being promoted in PAs. This includes technical support to promote traditional methods used by the local communities as well.

**Relief schemes:** In order to compensate local people for their losses and thereby enlist their support in wildlife conservation, a few schemes have been initiated. There are emergency funds to provide immediate medical support to people attacked by wildlife, relief schemes to provide support to the injured or family members of a victim. Stipend schemes have also been initiated to support women of the family of a victim.

#### *Tourism in Protected Areas*

Tourism is one of the major sources of foreign exchange in Nepal. A growing alliance has developed between the tourist sector and PAs. Approximately 27.4% tourists (80,410 out of 293,567) in 1993 and 45.5 % (191,617 out of 421,181) in 1999 visited PAs in Nepal. The tourism industry provides employment opportunities for many people and also functions as a local market for people living in the neighbourhood of PAs to sell their products. This also justifies the benefit of conservation, given that almost 50% of the revenue from the PAs is being channeled back for the development of the buffer zone community.

#### *Human-elephant conflict*

Human-elephant conflict is not a new phenomenon in Nepal. It is believed that the conflict is as old as agriculture. Human-elephant conflict intensified by the spread of agriculture into previously unoccupied wildlife habitat. The conversion of forested land to agriculture has led to serious conflict between man and elephant. Conflicts arise when elephants pass through human settlements, specially cultivated areas. The human-elephant conflict for crop damage is quite widespread and serious in the elephant range countries (Sukumar 1991). Fragmented habitats, small PAs, and degraded corridors have all contributed to the increase in crop degradation, property losses and human fatalities.

Annually, wilderness areas become smaller as forests are opened up for other purposes, thereby forcing elephants to feed on cultivated crops. In extreme situations, the human-elephant conflict has led to the killing of elephants by irate farmers.

The human-elephant conflict in Nepal is expected to be severe in the Royal Bardia National Park, where more than 60 elephants resident in the park move into the

Karnali flood plains and the Babai Valley. The human casualties by elephants were few when the population of wild elephant was small. But the situation may have changed today in the light of the increase in the size of the elephant population in the wild.

#### **Recommendations**

A detailed assessment of the human-elephant conflict in Nepal needs to be carried out. Such an assessment must include the nature and extent of crop damage caused by wild elephants, and suggest measures towards its mitigation. Damages caused by wild elephants must be compensated adequately and promptly in order to win the support of the local communities. Help must be given to the communities in their efforts to reduce elephant depredations. These may include suggestions for an alternative cropping/livelihood along the periphery of the PAs.

Detailed information concerning the distribution, number and home range, and movement pattern of elephants should be determined. Such scientific information must form the basis for the long-term management of elephants in Nepal.

Nepal and India need to strengthen their efforts in conserving the species across their national borders. Regular exchange of information on the movement and activities of ivory poachers would greatly help combat the problem of ivory trade.

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