THE ELEPHANT CONSERVATION ACTION PLAN FOR NEPAL

2009-2018

B. Shrestha, WTLCP

2009-2018

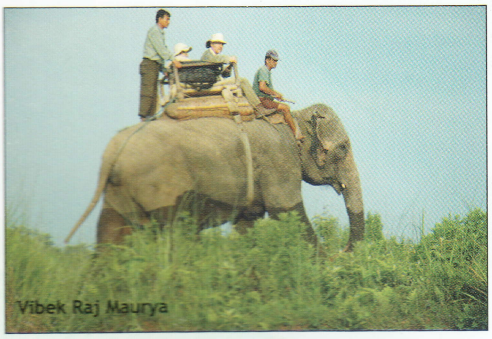
Government of Nepal
Ministry of Forests and Soil Conservation
Department of National Parks & Wildlife Conservation

Wild elephant at Bardia National Park.

A baby elephant at Kanchanpur.

Electric fencing at Thakurdwara, Bardia.

Elephant idol worshiping at Betkot, Kailali.



Elephant safari at Chitwan National Park.

A traditional *Machan* near Bardia National Park.

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FOREWORD

Elephants and human have been coexisted for centuries in the world. Nepalese people consider elephant as an incarnation of lord Ganesh, a god with elephant head; and therefore worship elephant. On the other hand, elephant and people; as they compete for shrinking forest, often come into conflict resulting loss of property, crops as well as lives of this endangered pachyderm and human.

Historically, forests of terai and inner terai of Nepal had been the prime habitat of Asian elephants. Until five or six decades ago, forests of Nepal's Terai and north and northeast India were continuous block that enabled elephants to move freely and mingle into one large population. However, huge forest loss that began in late 1950s after malaria eradication, resettlement programmes in Terai and continuous forest encroachment for human settlement and agriculture restricted wild elephants into four isolated group i.e. eastern, central, western and far - western groups. Presently, wild elephant population is estimated from 107 to 145 in Nepal.

Today, there are only about 35,000 - 40,000 Asian elephants left in wild. They are confined in 13 countries - Nepal, India, Bhutan, Bangladesh, Sri Lanka, Burma, Thailand, Cambodia, Laos, Vietnam, South China, Indonesia and Malaysia. Many elephant habitats in these countries are fragmented and further shrinking. Therefore, elephant range countries with fragmented habitats, including Nepal need extra efforts and regional support to save the wild elephants.

This Elephant Conservation Action Plan is a part of the greater effort of the Government of Nepal in order to conserve and retain coexistence with this mega vertebrate found within and across border of Nepal. The Ministry appeals all to join hands in Nepal's endeavour for elephant conservation and successful implementation of the Action Plan.

Yuba Raj Bhusal
Secretary

Government of Nepal
Ministry of Forests & Soil Conservation
Department of National Parks & Wildlife Conservation

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I would like to thank the Task Force Team members, Mr. Tika Ram Adhikari, Mr. Jhamak B. Karki, Ms. Madhuri Karki, Ms. Radha Wagle, Mr. Dinesh Karki and Mr. Kanchan Thapa for coordinating the preparation of the Action Plan.

Likewise, I would like to express my sincere thanks to Dr. Udaya Raj Sharma, then Secretary of the Ministry of Forests and Soil Conservation, then Director Generals Mr. Shyam Bajimaya, DNPWC, and Dr. K.C. Paudel, Department of Forests, Mr. Shiva Raj Bhatta and Mr. Fanindra Raj Kharel of DNPWC for reviewing the draft version of the Action Plan. Similarly, I acknowledge the role of Mr. Bhuvan Keshar Sharma for developing log - frame of the Action Plan. I would also like to thank the National Trust for Nature Conservation (NTNC) for contributing to the preparation of the Plan.

My heartiest congratulations go to the Western Terai Landscape Complex Project (WTLCP) and the World Wide Fund for Nature (WWF) Nepal for providing financial and facilitation support to the preparation of the Plan.

Last but not the least, I thank all stakeholders, local communities and all those people who have directly or indirectly contributed to the preparation and finalization of the Action Plan.

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EXECUTIVE SUMMARY

Besides being a "flagship" species, elephants in Nepal that number between 107 - 145, truly represent the Terai landscape as they traverse beyond any given forest tracts and protected areas. In Nepal, both forest cover and quality are difficult to maintain because of its multiple role and services including sustainable use, timber harvest, and biodiversity conservation. Perhaps the best option to protect megavertebrate like the elephant in Nepal's Terai, is through landscape - level conservation to address constraints in genetics, and evolutionary adaptation. However, landscape conservation comes with livelihood issues of rural Terai communities who are the custodians of the land.

In early 2007, the Western Terai Landscape Complex Project (WTLCP), assigned Resources Himalaya Foundation, a knowledge - based NGO, to prepare the elephant conservation action plan for Nepal, using technical expertise of Dr. Pralad Yonzon with a 9 member team. This action plan recognizes people as the custodian of the land and makes an all out effort in building strong linkages between rural communities, academic institutions, government agencies, donors in Nepal and international communities. The goal of the Elephant Conservation Action Plan of Nepal is to save the elephants in the wild from extinction, immediately address habitat loss and mitigate associated people - elephant conflict. By grasping knowledge - based information and active land management, it is hoped that people - elephant conflicts are minimized and benefits accrue to protect wild elephants in Nepal.

This action plan differs from others by being people centered and progressive by constituting a team that will look after the progress of the action plan. It also embarks upon ground - level planning with technical assistance so that all 17 Terai and 2 Hill district communities take care of their land, conserve elephants and protect themselves through planning, implementing and monitoring of the action plan activities. The action plan prescribes six objectives with twenty - one activities, estimated to cost US$ 2,625,000 over a 10 year period.

Objective one provides science - based information on the elephant populations and their herd dynamics to national - level monitoring and district level planning to conserve elephants and protect people. Objective two entails for stringent maintenance of distirct - level elephant habitats and corridors that are identified and protected to prevent elephants from gaining access to crops and people. Objective three is to reduce people - elephant conflict through best viable measures like electric fencing and compensation for the loss of life which may alleviate human suffering. Objective four is associated with sustaining captive population through better management and by continuing breeding captive females with free ranging males to enhance heterozygosity in them. Objective five is about strengthening existing bilateral cooperation, and international conventions to address cross border elephant issues so that wild elephants in trans - border areas of Nepal and India, are protected. Objective six is on structuring a committee to build a greater and effective partnership between rural communities concerned government line agencies and conservation organizations and donors to provide continual support to the people of Nepal and protect elephants.

CONTENTS

CHAPTER ONE

INTRODUCTION

BACKGROUND

Man and elephants have coexisted for centuries. Some two million years ago, elephants, mammoths and mastodons were contemporaries with the early man. Elephants exhibited true evolutionary adaptation through its large body size to feed upon coarse plant materials and to withstand all predators except humans. As a matter of fact, elephant was a staple part of man's diet during the Pleistocene (Eisenberg, 1981).

A. Elephants In Asia

There are about 35,000 - 40,000 wild elephants in 13 countries that include Nepal, India, Bhutan, Bangladesh, Sri Lanka, Burma, Thailand, Kampuchea, Laos, Vietnam, South China, Indonesia and Malaysia (Kempf and Santiapillai, 2000). However, many elephant habitats in these countries, are small, fragmented and only six large areas (each covering approximately 20,000 Km^2) occur in Asia where wild elephants are considered to be viable for the next 100 years. The State of Wild Asian Elephant Conservation in 2003, the first ever independent audit of elephant conservation, suggested that a majority of Asian governments except India and Sri Lanka, are failing to arrest the sharp decline of the elephant population in the wild (Jepson and Canney, 2003). Therefore, elephant range countries with fragmented habitats, including Nepal need extra efforts and regional support to save their elephants.

B. Elephant Conservation Action Plan for Nepal

In the last three decades, Nepal has put its efforts at best to address endangered species conservation particularly mega vertebrates like elephants and rhinos through a multi - prong approaches that include national strategies, action plans and land - based management activities. As a result, elephants in Nepal, are protected by stringent laws, enabling them to survive in their habitats in protected areas and landscape level conservation measures of Nepal Government, that facilitate long - term survival and their free - ranging habits.

The Western Terai Landscape Complex Project (WTLCP) is a joint initiative of the Ministry of Forests and Soil Conservation of Government Of Nepal (MoFSC), United Nations Development Programme, Global Environment Facility, The Netherlands Development Organization, World Wildlife Fund Nepal, International Plant Genetic Resources Institute, Nepal Agriculture Research Council and Local Initiatives for Biodiversity Research and Development.

In early 2007, the WTLCP initiated activities to prepare the elephant conservation action plan for Nepal, using technical expertise of Resources Himalaya Foundation, with following inclusions: 1) determine status and distribution of captive and wild Asian elephants; 2) identify habitat status of the Asian elephants in the Terai and actions to restore or conserve them; 3) develop response to threats for elephants to ensure their long term conservation; 4) develop draft policy and legal framework to conserve elephants; 5) design and develop framework for controlling illegal trade of elephant parts; and 6) formulate strategies to mitigate human - elephant conflict.

Several species action plans in the past, have suffered because of less rigor in the field activities and they centered more on planning. Also, uncertainty about fund availability was discounted. Therefore, task - based planning tools were deemed not necessary to facilitate all 19 districts to develop their district activity plans to conserve elephants and to protect themselves. Obviously, objectives of this action plan were thus, derived from nation - wide data gathering, satellite imagery analyses, and several dozens of participatory meetings, culminating in a national - level workshop.

The elephant conservation action plan attempts to develop long - term conservation of a flagship species whose survival is tied up with the landuse change in Nepal's Terai (lowland). Therefore, Terai district forests and lowland protected areas have become the last mainstay for the survival of free - ranging

elephants. Perhaps, elephant population watch, minimizing loss of Terai forest, active management of domestic elephants and willingness to address elephant - human conflict will strengthen the existence of elephants and their well - being in Nepal and beyond.

STATUS OF ELEPHANTS IN NEPAL

There are two living species: Asian elephant *(Elephas maximus)* and African savanna elephant *(Loxodonta africana)*. Asian elephant has four subspecies: 1) Indian elephant *(Elephas maximus bengalensis)*, 2) Ceylon elephant *(E. m. maximus)*, 3) Sumatran elephant *(E. m. sumtrana)*, and 4) Malaysian elephant *(E. m. hirsutus) (Macdonald, 1985)*. Recently, Borneo pygmy elephant *(E. m. borneensis)* was discovered, making it the 5th Asian sub species. In Nepal, elephants are protected species. The World Conservation Unions (IUCN) has listed the Asian elephants as endangered in the List of Threatened Species (IUCN, 2006).

The elephants that occur in Bhutan, India, and Nepal are, essentially, the Indian elephant which is estimated between 26,747 - 31,465 animals in four countries (Table 1). However, the genetic make up of elephants in India, has four distinct populations: 1) North and northeast India, 2) Central India, 3) Nilgiri, and 4) Anamalai - Periyar. The last two south Indian populations, Nilgiri and Anamalai - Periyar, are merely separated by a 40 km - wide gap (Palghat) in the Western Ghats (Vidya et al., 2005). These populations have undergone considerable changes in their genetic make up because of geographical isolation and ecological separation.

Table 1. Free - ranging elephants in four south Asian countries.

Country	Estimated Elephant Numbers	Source
India	26,390 - 30,770	Sukumar, 2003
Nepal	107 - 145	ten Velde 1999, Yadav 2005, Pradhan 2007, Yonzon 2008
Bhutan	100 - 300	Wangchuk, 2004
Bangladesh	150 - 250	Sukumar 1989, 2003

Historically, forests in Nepal Terai enabled elephants in the north and northeast India to be in one contiguous, large population. Undoubtedly, Terai had a large resident population of elephants. For example, Mandev, the Licchivi king in the 5th Century (465 - 506 AD), crossed the Narayani River with hundreds of elephants and horses to quell his oppositions (Bhandari, 1999). Likewise, Prithivi Narayan Shah, first king of the Shah dynasty, provided 7 adult elephants annually from 1743 - 1775 to the East India Company for invading Parsa - Mahotari during the Makwanpur battle (JBK, 1985).

After 1950, loss of Nepal's Terai forest was not only tied with malaria eradication but also with the Terai resettlement driven by three large spatial events: 1) in early 1960s, Nepalis residing in Burma (Myanmar) returned back including thousands of Nepalis and ex-army families from the northeast India; 2) exodus of hill people in the western Terai took place after the 1954 flood, and incidence of poverty with crop failures, and 3) land reform program which brought thousands of migrant laborers from India who resided in Nepal since then (Kansakar, 1979). Therefore, north and northeastern elephant populations in India segregated in recent times, largely because of deforestation in Nepal, since 1950s.

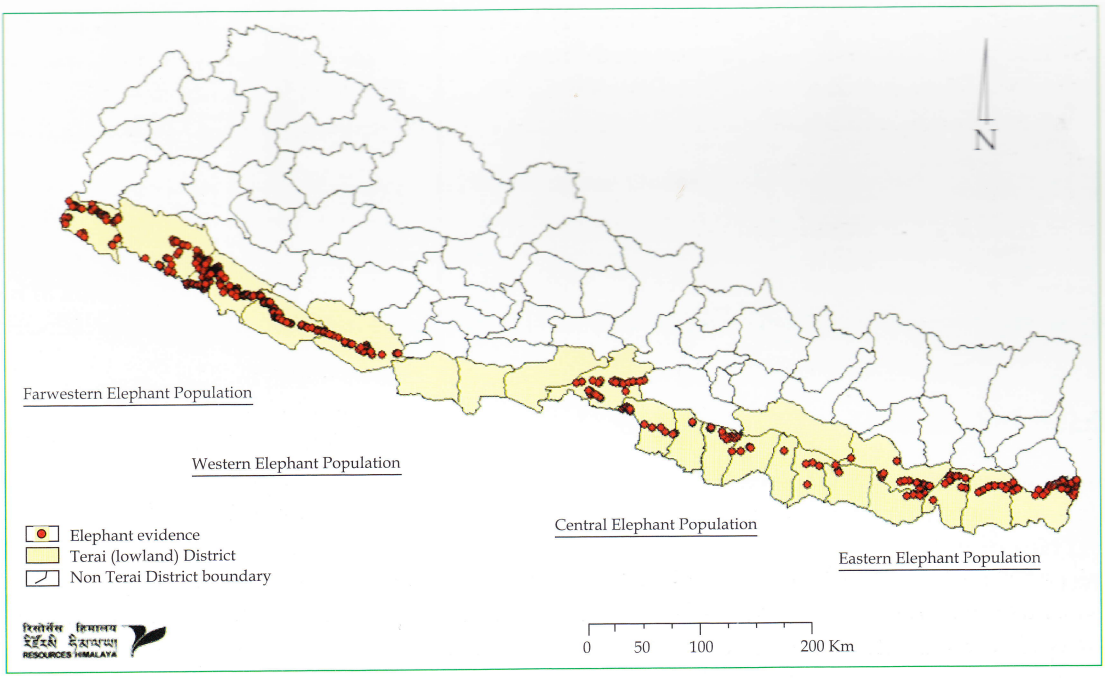
In Nepal, huge forest loss that began in 1950s, culminated into restricting wild elephants into four small partially or completely isolated groups numbering less than 100 animals each (Pradhan, 2007). The estimated elephant population of 107 - 145 Indian elephants in Nepal in four geographic areas include 7 - 15 elephants in eastern Terai, 25 - 30 elephants in central Terai, 60 - 80 elephants in western Terai and 15 - 20 elephants in far western Terai (Pradhan, 2007; ten Velde, 1999; Yadav, 2002, 2005).

DISTRIBUTION OF ELEPHANT POPULATION

Nepal's elephants occupy the centerfold for the north and northeast Indian elephant populations which has a collective geographic distribution of over a distance of 2,000 km, from Meghalaya to Uttar Pradesh. In Nepal, the northeast Indian population is represented by the eastern (Jhapa) and perhaps by the central (Parsa - Chitwan) populations and the north Indian population by western (Bardia) and far western (Suklaphanta) populations.

In 2007, the elephant action plan team of Resources Himalaya, collected elephant distribution data which revealed that elephants moved along 135 VDCs (village development committee) of 19 districts (17 in Terai and 2 in Hills), suggesting landscape level conservation as strategy to protect elephants through maintenance of forest corridors (Fig. 1) (Table 2).

Figure 1. Elephant distribution in Nepal based on mapped evidences.



A. Elephants in Eastern Nepal

There are resident and migratory elephants. The resident Jhapa population and migratory herds from Mahanada Wildlife Sanctuary of West Bengal, constitute the eastern population. Resident herd has fluctuated between 7 - 15 animals. Reportedly, seasonal movement of this herd is difficult to contain because elephants move between 7 districts where forest corridors are fragmented and intermittently dotted with human settlements. Incidentally, Koshi Tappu Wildlife Reserve, the only protected area in the east, is tiny with 4.59 Km^2 forest. In addition, migratory herds which were estimated to contain 292 elephants in 2000, has increased to over 400 animals. In November 2007, 175 elephants including 37 calves entered into Jhapa District, but did not go beyond it. The Indian management authority suspected that the herd must have come from Assam as they move between Assam, North Bengal and Eastern Nepal.

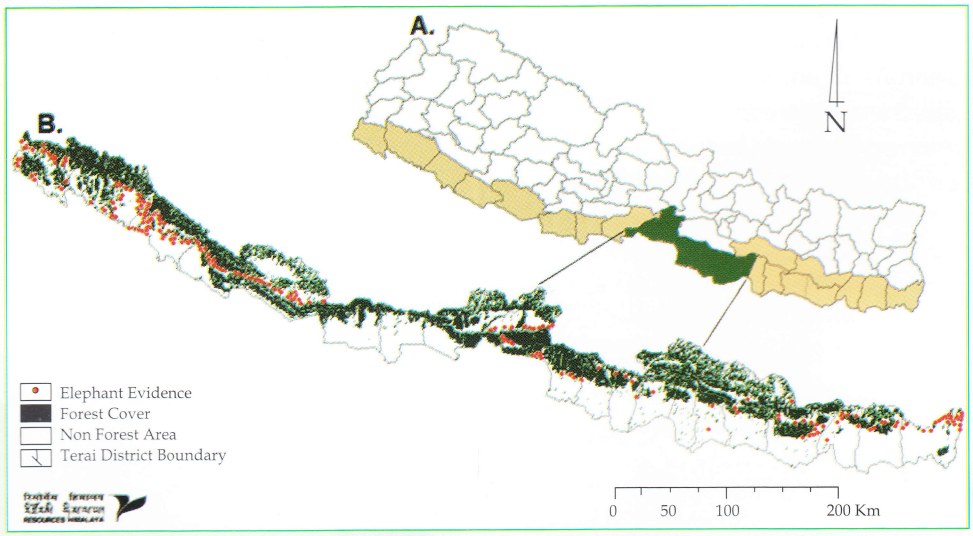
Table 2. District, VDCs and their landuse where elephant evidences were observed.

Elephants	District	Affected No. of VDCs	Estimated Forest Cover (Km^2)	Estimated Non Forest area (Km^2)
Eastern Population	Jhapa	9	142.5	1502.1
	Morang	5	37.4	1455.0
	Sunsari	11	160.3	1109.8
	Saptari	6	304.0	1068.4
	Siraha	1	233.1	967.1
	Udayapur	7	1065	956.8
	Dhanusha	2	286.3	905.9
Central Population	Mahotari	1	238.3	787.3
	Sarlahi	6	289.5	974.0
	Rautahat	3	304.5	833.8
	Bara	3	403.8	788.6
	Parsa	5	700.0	694.9
	Chitwan	12	1291.0	926.3
Western Population	Dang	7	1233.3	1732.0
	Banke	7	933.7	995.3
	Bardia	22	776.5	1201.0
Far western Population	Kailali	15	1665.0	1584.6
	Kanchanpur	13	918.0	722.5

B. Elephants in Central Nepal

The population is estimated at 25 - 30 elephants. Although the herds move between 5 - 6 districts, reported loss of life and crop and property damages are considered less to the eastern Nepal, for the following reasons: 1) two protected areas (Chitwan National Park and Parsa Wildlife Reserve) are contiguous which cover 1431 Km^2, 2) district forest areas between Parsa, Chitwan, Bara and Rautahat are connected; and 3) seasonal movement of elephants through forest corridors are less disturbed. Therefore, forests are vital (Fig. 2).

Figure 2. A. Central Nepal elephant distribution; B. Lowland (17 districts) and Hill (2 district) forest and elephant evidences in Nepal (Terai: 20 districts, Hills: 2 districts).



C. Elephants in Western Nepal

Until 1994, the central Nepal population was dwindling and only 2 elephants were often noticed in Bardia. Later, 15 - 20 elephants from India, were regularly seen in the Karnali floodplain (Pradhan et al., 2007). Elephants move over 3 districts and 36 VDCs where forest (2,944 Km^2) is comparatively better than in the east and far west. The western populations widely use Khata (Nepal) - Katarniaghat (India) corridor suggesting both intact forest corridors and landscape level biodiversity management benefit mega herbivores like elephants. A recent study rigorously estimated some 50 elephants in the Karnali floodplain and over 30 in two herds in the Babai Valley, totaling 80 animals (Pradhan, 2007).Bardia population has high number of sub adult males who show little or no relatedness suggesting non - random location dispersal (Pradhan et al., 2007).

Bardia has been recently re - colonized elephant population whose level of genetic variability is moderately low (ca 60% heterozygosity) when compared with US zoo animals (80 %) (Pradhan, 2007). This can be explained by a limited number of founders from one single population in 1994. Most of the calves and adult females had high kinship coefficients indicating mother - offspring relationships. In contrast, most of the sub - adult males were not related, either among themselves or with the adult females.

D. Elephants in Far western Nepal

Some 15 - 20 elephants reside in Kailali and Kanchanpur Districts and their impact are felt in 28 VDCS. Limited elephant movement data suggest two populations: resident Suklaphanta population (3 - 5 animals) in the west and the Basanta population in the east, which is migratory. In the far west, elephants frequent the Churiya range (300 - 800 m). Agriculture fields have sustained elephant diet seasonally (Karmacharya, 2004). There are at least five major routes between India and Nepal where elephants migrate seasonally.

CHAPTER TWO

CONSERVATION BIOLOGY

ECOLOGY

The world's highest mountain range and the existence of the wild elephants, the largest land mammal makes Nepal surprisingly diverse. Asian elephants are gregarious characterized by large body size as they weigh about 5,000 kg, 3 meter tall, gray body with somewhat convex back, fan - shaped large ears, muscular one - tip trunk, and tusk on males which are modified upper incisors (Eisenberg et al.,1990). Females are comparatively smaller than males, and usually they do not have tusk. Some females may have dentine protuberances, referred as tush. With their trunk, elephants are versatile feeder enabling them to reach the ground for grasses and tree branches, and other social activities. Elephants often take refuge to the shade or water during hot summer days. Dominant large males in musth (with high testosterone levels) often mate with adult females. Gestation takes about 22 months, and one calf is born. Females become sexually matured after 14 years and they give birth every four years. Life span is about 60 years but many do not live that long in the wild. Female and young males live in herds. Highly evolved elephant social organization is characterized by a matriarch, usually the oldest and largest female. Males above 16 years move alone or in bachelor herd. Herds often join with others to form large groups and they communicate through grunts, moans, and bellows.

Habitat use by elephant depends on the availability of food materials, which vary with the seasons. In Bardia, elephants strongly preferred floodplain during the cool and the hot dry seasons. The Bardia elephant population has been growing, but the preferred floodplain habitat is small (60 Km^2) (Pradhan et al., 2007a). Although elephants had relatively low impact on tree vegetation, riverine forests were widely used where pushed trees were browsed by elephants. Also, elephants used forest patches with high density of food in the relatively nutrient - poor sal - dominated forest. During monsoon, nutritious grasses attract elephants into tall grassland.

The far west elephants use all forest types: sal forest, mixed forest, riverine forest and sissoo plantation. All elephant habitats are close to human settlements. Over 88% of all elephant sites were less than 0.5 km from villages. Perhaps, this is a feeding/escape - cover adaptation whereby elephants can raid crops and take refuge in the forests (Yonzon et al., 2003).

THREATS

Habitat loss inevitably conflicts with farmers as they lose shelter, crops and life. In retaliation, elephants are shot, poisoned, electrocuted and many starved to death because of human - inflicted injuries. Despite the continued forest decline and ever - increasing threats to the remaining wild populations, little information is available on the extent of habitats. Isolated, small migratory herds which may range seasonally hundreds of kilometers of several administrative boundaries including farm lands, forests and protected areas, are difficult for any or all to come up with a comprehensive long - term plan that targets to make the population viable as well as to derive benefits of such maintenance, to local communities.

During the preparation of action plan, 416 elephant - related data points with several socioeconomic variables, were plotted on nine Landsat 7 Enhanced Thematic Mapper Plus (ETM+) scenes that were acquired over the period from 2005 to 2007. Of 20 Terai districts, elephants reside and/or seasonally migrate to 17 districts. Nawalparasi, Rupandehi and Kapilbastu Districts do not have elephants. In addition, Udyapur and Sindhuli, both hill districts were visited in the past by the eastern population. Sindhuli District has been a recent addition. Perhaps this is an adaptation to shrinking food base and elephants have begun to foray beyond their past home range. The Department of Forest and the Forest Research and Survey Centre of MoFS monitored forest cover from 1978/79 - 1990/91 (FORSEC, 1994) and 1990/91 - 2000/01 (DOF, 2005). Combining these forest data

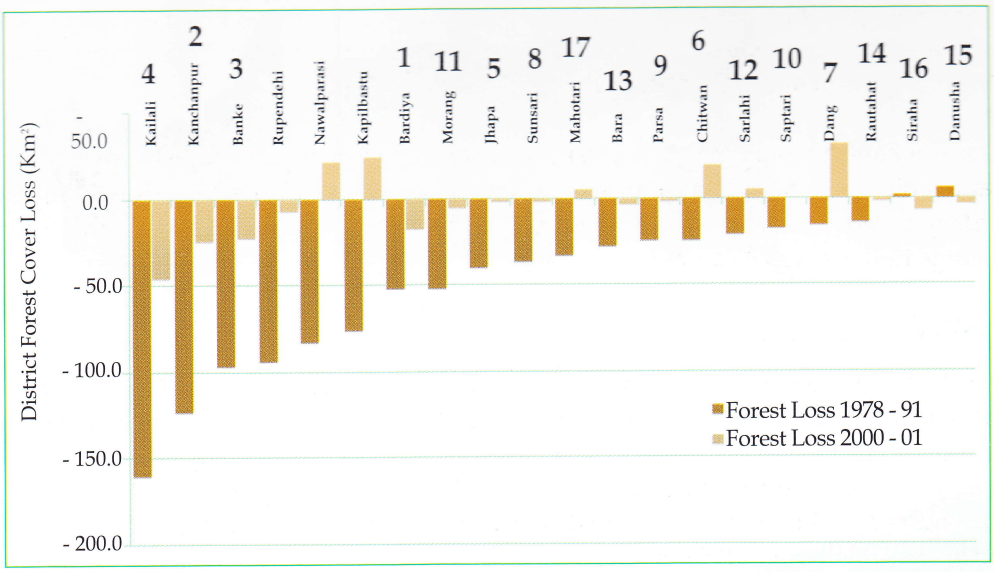
with the ranking of elephant - related evidences in each district, the present analyses suggest that 13 elephant districts are losing forest cover rapidly (Fig. 4). Of these, Kailali, Kanchanpur and Banke are the top three districts losing over 125 Km^2 of forest each, which are prime elephant habitat.

Elephant - related damages also relate to landuse with emphasis to forest cover. Two populations (central and far western) are attributed with less human - related damages where forest and non - forest areas (largely agriculture) tally closely (Table 2). Comparatively, the eastern and western populations incur more damages where farms are predominant, coupled with migratory herds. Elephants travel farther in search of food and kill people and damage more crops. Heightened people –elephant conflict has already begun. In retaliation, more elephants will be poisoned, shot and injured. Consequently, elephant number may dwindle and local residents will lose their livelihood and persecuted unfairly. These are real threats.

HUMANS AND FREE RANGING ELEPHANTS

Elephant - people conflict has become the foremost, widely debatable issue in biodiversity conservation in Nepal. It is even more severe for the management in Terai protected areas. Resident elephants together with migrating elephants have impacted rural communities and they wonder about consequences of overpopulation of elephants in near future.

Figure 4. Deforestation in the Terai. District numbers indicate ranking of district - wise elephant evidences.

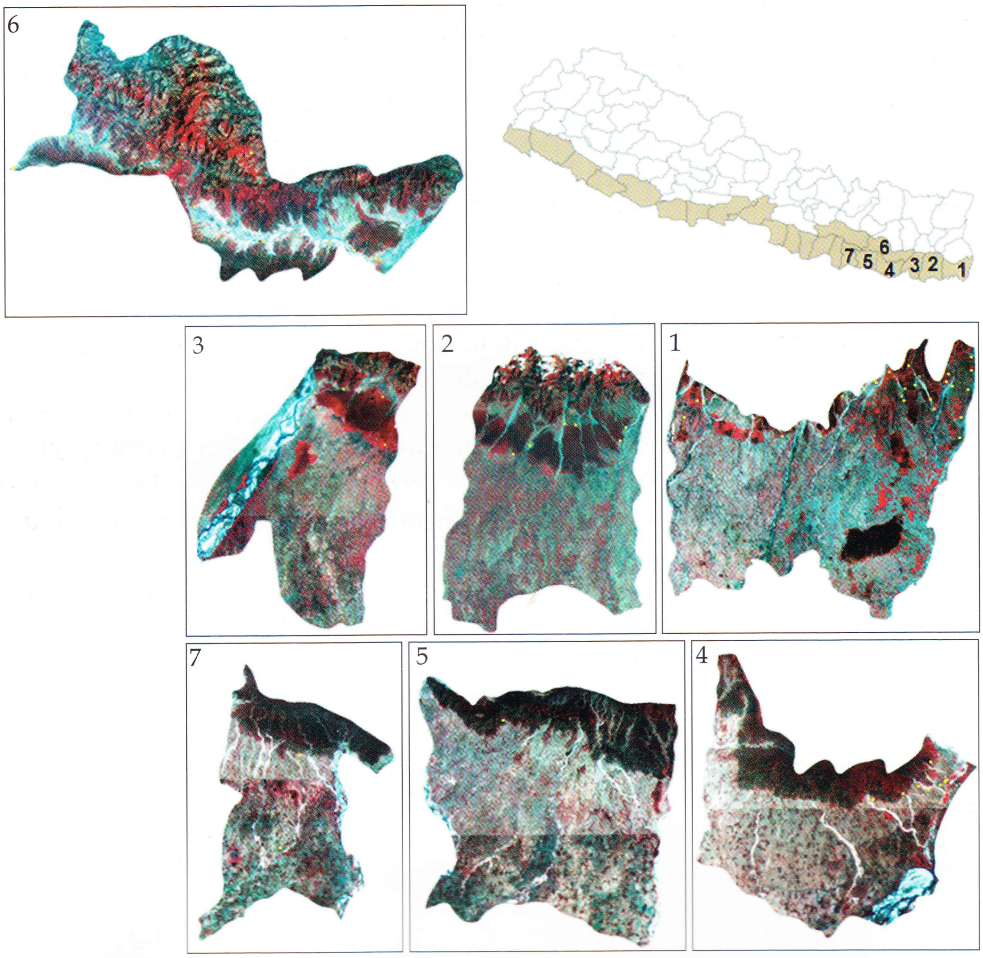


Lessons learnt from over three decades of elephant conservation in Nepal suggest that no single agency can address the myriad of issues connected with conflict. As protected areas can no longer contain wild elephants, a scenario where more elephants, more people, more damages and less forest collectively mandate active management prescription from district forest offices, village development committees, district development committees, protected areas personnel, and community - based organizations.

A. Eastern Nepal

In east Nepal, the Biodiversity Conservation Society Nepal of Bahun Dangi (Jhapa) reported during the elephant workshop, that each household incurs a loss of about NPR 30,000 every year. In addition to economic loss and property damages, livelihood costs have been rising. For example, 20 people were killed in 2003 - 2007 in Jhapa and 11 people were killed in three months (August - October, 2006) in Morang and Sunsari Districts (Fig. 5). Many farms are abandoned and land price in Bahun Dangi has gone down drastically as there are no new

Figure 5. Elephant evidences (yellow colored points) in eastern Nepal (1. Jhapa, 2.Morang, 3 Sunsari, 4. Saptari, 5. Siraha, 6. Udayapur and 7. Dhanusa districts).



land transactions. Social ostracize may have begun as neighboring village households in do not allow their daughters and relatives to get married and settle down in Bahun Dangi, for the fear of getting killed by elephants. Having realized that there will be no outside help and they have to defend themselves, four elephants were electrocuted, and 5 - 8 are injured with gun shot in east Nepal in 2007. A prison term of 5 - 15 year and/or a penalty of NPR 50,000 - 100,000 are stipulated by the law (National Parks and Wildlife Conservation Act, 1993) to those who kill elephants. People retaliate because damages are huge and there are no institutional processes to address their grievances.

B. Central Nepal

The central Nepal elephant population has no connection with any herds from India. Although a few elephants were killed (3 animals in 3 years, 2005 - 2007) in Sarlahi which is the eastern limit for the central population, the population has not grown noticeably. No migrating elephants occur.

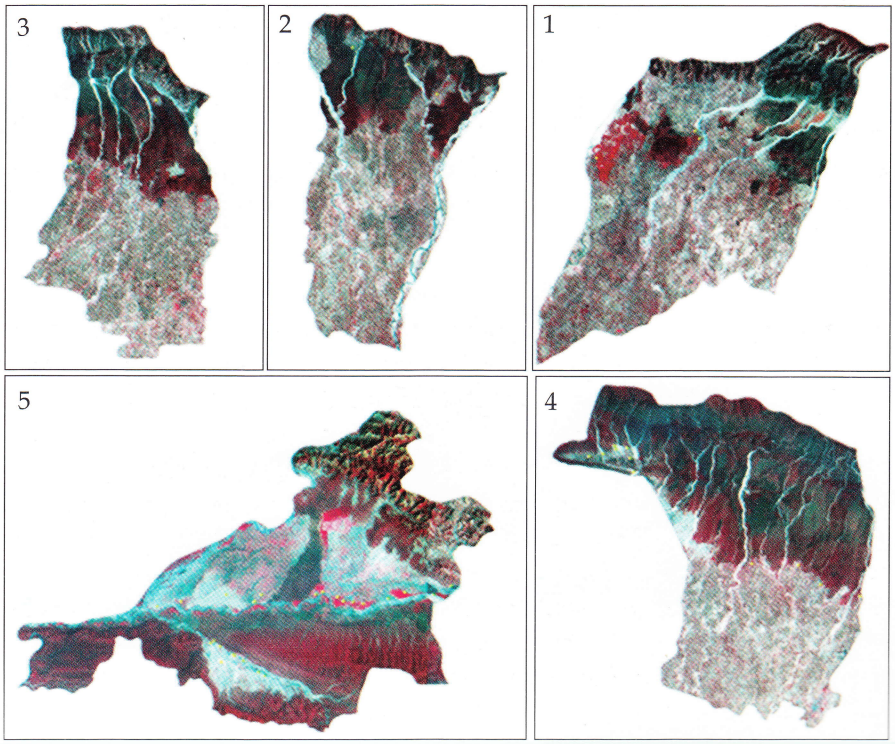
Only nine years after the establishment in 1973, Chitwan National Park witnessed its first wild elephant from Parsa in 1984 (Fig. 6). The Chitwan buffer zone management which receives 50% of the park revenue, compensate families with NPR 50,000 for human casualties, NPR 20,000 for injury, NPR 5,000 for mud house damages and money enough to compensate 80 - 100% grainery (rice store) loss. In addition, they have successfully demonstrated that elephant movement in settlements can be curtailed by erecting 14.5 km long electric fence in Bacchauli and Kumroj VDCs (northeast of the park). Furthermore, there is plan to erect 73 km long similar electric fence in the Madi Valley (south - west of the park) where elephant - related damages are increasingly difficult to contain.

C. Western Nepal

Because the western elephant population mingles with the Indian herds, 20,000 people are estimated to be affected one way or the other in Banke, Bardia and Dang districts (Fig. 7). Of 80 animals in 3 herds, 28 deaths has been reported, mostly calves, a few old adults and 2 animals were electrocuted. No poaching has occurred. Local residents feel that elephant population has swelled up because they narrate that several herds from Katarnia Ghat in India enter into Khata and Karnali flood plain (Bardia National Park). In Bardia alone, 10 people were killed, 33 injured and nearly 900 houses were destroyed in between 2004 - 2007. Resident communities strongly contest that corridors have pushed elephants farther into districts where elephants were not known before.

No statuary mechanism has been developed to address elephant - related damages. Across the Nepal border, such as in Katarniaghat, loss of life is compensated with INR 100,000 by the Indian government. Having none in the territory of Nepal, protests and public disobedience are emerging for elephant - related deaths. For example, national highway was blocked in Bardia for days and the park authority compensated the family with NPR 200, 000. Now, communities are demanding NPR 1,000, 000 (one million) as compensation for the loss of life, all across the Terai. They seek injured should be assisted by the State for their livelihood. In elephant affected areas, they demand elephant - related trainings, education and job opportunities.

Figure 6. Elephant evidences (bright yellow) in central Nepal (1. Sarlahi, 2. Rautahat, 3. Bara, 4. Parsa and 5. Chitwan districts).



D. Far Western Nepal

The Far western elephant population together with the Indian migrating herds from Dhudwa National Park and adjoining areas, immensely affect mukta kamaya (bonded laborers), sukumbasi (landless), who reside all along forest corridors in Kailali and Kanchanpur Districts (Fig.8). It appears that conflict heightens in elephant forest corridors (Dhudwa - Basanta, Dhudwa - Sukla) where communities have agroforestry practices which is also evident in eastern Nepal (Thapa, 2007). The Red Cross Society has provided some relief to the poor.

Figure 7. Elephant evidences (bright yellow) in western Nepal (1. Dang, 2.Banke, & 3. Bardia districts).

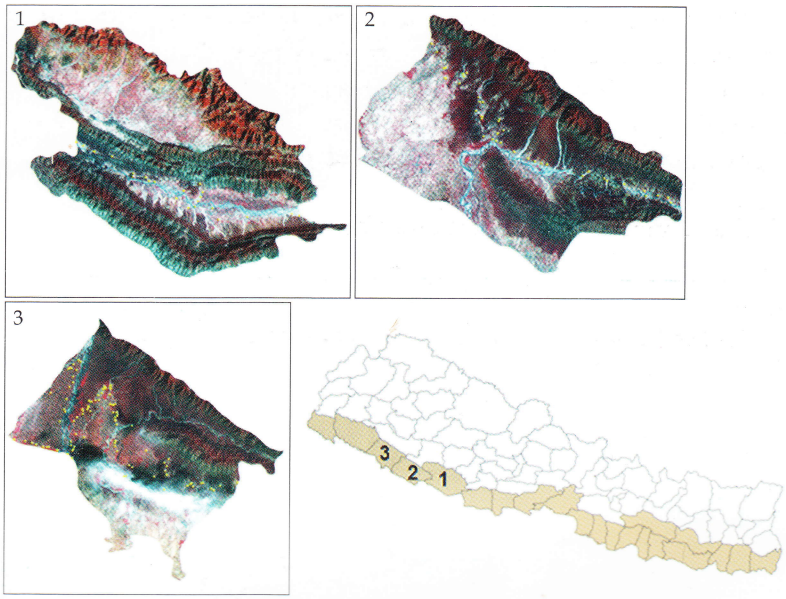
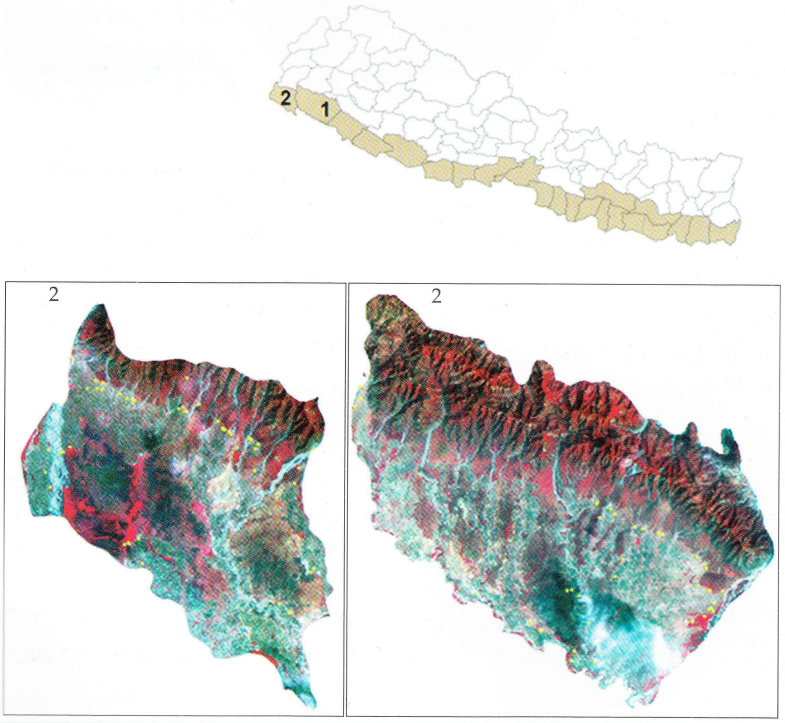


Figure 8. Elephant evidences (yellow colored points) in far western Nepal (1. Kailali and 2. Kanchanpur districts).

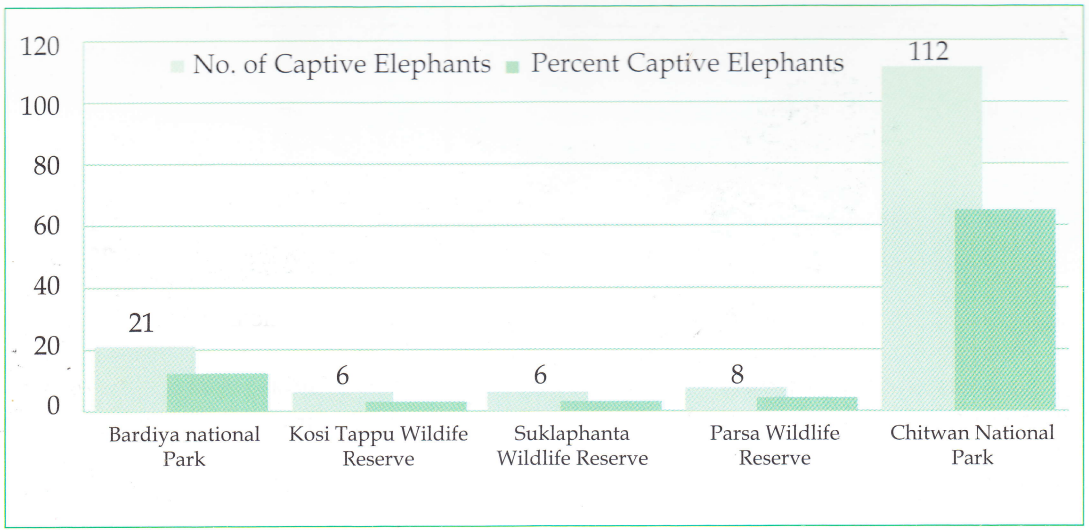


ELEPHANTS IN CAPTIVITY

A. Elephant Numbers

The term 'captive elephants' means those caught in the wild and trained for human use. Likewise, 'domestic' means elephants are bred and raised by the humans. Historically, many Terai households kept captive elephants but there are none now (Yonzon, 2003). Earlier government elephant stables (haathisar) began with captive animals and now they straddle between captive and domestic animals. Between 1898 and 1970, there were 31 government stables for captive elephants, which stretched from Jhapa, east Nepal to Kanchanpur, far west Nepal (JBK, 1985). Elephants were captured from the wild, subdued and trained in stables as a reliable mode of transport. The last wild elephant was captured near Parsa in 1969. By late 1970, both elephant stables and private owners declined drastically with loss of forest and the rising cost of up keeping the elephants. As of now, there are five government elephant stables, one each in all five Terai (lowland) protected areas and one elephant breeding center in Chitwan that was established in 1985 (Gopali, 2003). In Nepal, some 153 animals comprise as captive population which include both government and privately - owned elephants (Fig. 9).

Figure 9. Captive elephants in five Terai protected areas.



B. Elephants and Tourism

Tourism in Chitwan can not be imagined without elephants as they provide safe viewing of rhinos, tigers, mugger crocodiles and may others, carrying tourists in tall grass and water - logged areas. Elephants in Chitwan are increasingly marketed as value - added tourism in the form of adventure activities world elephant polo and annual elephant race. There are 112 elephants of both captive and domestic nature. The six concessionaires inside the Park, have 46 elephants, government agencies 37, NGO 5 and outside the park, 24 privately - owned elephants are rented for tourists who view wildlife in the buffer zone (Table 3).

Breeding of captive elephants is costly and largely unsuccessful when compared with the ease of buying elephants. In Sonepur of Bihar (India), the largest cattle fair of Asia is organized in November each year, where huge numbers of elephants are traded. This is where most of the private owners go and make purchase. But CITES (Convention on International Trade in Endagered Species of wild Flora and Fauna) forbids such because wild elephants are listed in Appendix One. In addition, under the aegis of CITES, MIKE (Monitoring the Illegal Killing of Elephants) enables elephant range States like Nepal to measure levels and trends in the illegal hunting of elephants. In Nepal, trade on elephant body parts (ivory) is not much heard.

C. Viability of Captive Population

Given the limits of both wild and captive populations, is decimation of captive elephant population in Nepal near? Fortunately, it appears to be not so. Since 1979, wild tuskers have been mating with captive females in government stables. This was first noticed in Koshi Tappu in early eighties.

The Elephant Breeding Center at Khorsor, Chitwan presents a case on how to successfully manage breeding program using both captive and wild population. Of the 30 calves in Chitwan till 2007 (Table 3), 93% were sired by the free - ranging male, suggesting captive population may become viable in future provided that there is continuity in genetic enhancement and progeny contribution from the near - by wild population(Yonzon, 2008).

Table 3. Captive/domestic elephants in Chitwan National Park and its buffer zone.

Location of Trained Elephants	Status	Adult	Calf
Elephant Breeding Center	Government	10	18
Saurah Haathisar	Government	6	3
NTNC	NGO	4	1
Tiger Tops	Hotel	13	-
Temple Tiger	Hotel	6	3
Island Jungle	Hotel	4	-
Machan Wildlife	Hotel	5	2
Chitwan Jungle	Hotel	6	1
Gaida Wildlife	Hotel	5	1
Privately owned Elephants in Buffer Zone	Rental	23	1
Total		**82**	**30**

Keeping in view of the elephant - based tourism as the back bone, the 'Domestic Elephant Management Policy 2003" attempts: 1) to maximize economic and environmental benefits through the management of domestic elephants; 2) to bring private entrepreneurs and others into domestic elephant management; and 3) to uplift the living standard of resident communities through equitable sharing of profits that accrue from the management of the domestic elephants.

Globally, tuberculosis in elephants is widespread. Even in developed countries, elephants in the zoos, suffer from various transmittable diseases including tuberculosis. Various reports suggest that Asian elephants are susceptible to tuberculosis and other infectious diseases (Mikota et al., 2000). In the last two year, captive elephants were suspected with tuberculosis and 6 were considered with high risk. To minimize elephant loss and optimizing benefits to management, a working group of overseas veterinarians and park managers are conducting confirmatory diagnostic test on these 25 animals from five different locations.

CHAPTER THREE

ELEPHANT CONSERVATION ACTION PLAN

BACKGROUND

Given land is scarce and forests are critical in Nepal, forest cover quality is hard to maintain because its usages warrant multiple role and services including sustainable use and harvest, biodiversity conservation and livelihood of the poor. Forests are getting more fragmented, which means more challenges and a few opportunities .Therefore, in the absence of large intact forests, the conservation remains difficult to protect biological wealth including viable number of elephants and sustain Nepal's rural populace.

Although protected areas system in Nepal has been progressive covering 18% of the land, endangered species like the elephants face the risk of local extinction because of insufficient food and habitat limitation. Therefore, crisis management may become an integral part of conservation in near future. Small, disjunct elephant populations as in the case of Nepal, may suffer from genetic drift and inbreeding to become susceptible to random demographic changes like high juvenile mortality and stochastic environmental events. Perhaps the best option to protect species with such precarious background, is through landscape - level conservation. It also addresses constraints in genetics, and evolutionary adaptation. However, landscape conservation in developing countries comes with livelihood issues of rural communities who are the custodians of the land. Therefore, this action plan recognizes people as the custodian of the land and makes an all out effort in building strong linkages between rural communities, academic institutions, government agencies of Nepal and India, and international communities and donors. By grasping continual information gathering and active forest - wildlife management, it is hoped that people - elephant conflicts are minimized to protect wild elephants in Nepal.

GOAL

The goal of the Elephant Conservation Action Plan of Nepal is to save elephants in the wild from extinction, immediately address habitat loss and mitigate escalating people - elephant conflict.

OBJECTIVES

Besides being a "flagship" species, elephants truly represent the Terai landscape - level conservation as they traverse beyond any given forest tracts and protected areas. Therefore, to save wild elephants where land hunger is high, five cutting edge objectives of the action plan will attempt to address all cross - sectoral issues.

Objective One: Determine and monitor status of both resident and migrating elephant herds in all Terai districts of Nepal.

Rationale: The exact status of resident elephants in Nepal and migrating elephant herds from India, need to be known. The Bardia study suggests that seasonal migratory herds associate with residents either to maintain bonds or to establish hierarchies within kin groups and thereby, facilitate gene exchange. Elephant herd size is known to vary over time and space, based on food availability. Although herd size decrease with habitat quality, in general, there is a need to understand: 1) how small herds are better adapted to patchily distributed resource, and 2) ecological reasons for small herds to take extensive movements within a large home range.

Output: Science - based information on the elephant population and their herd dynamics are available to national - level monitoring and district level planning to conserve elephants and protect people.

Activities:

1 Determine population structure, composition and abundance of all four resident herds through in - depth field studies.

2 Acquire knowledge on elephant landscape and population biology by using newly available genetic techniques and field ecology such as genetic fingerprinting, photographic capture - recapture survey to monitor survival rates, and satellite - tracking to determine optimal habitat areas.

3 Working with Nepali and Indian regional experts, establish a range - wide satellite - tracking program to provide essential baseline information on area requirements, habitat selection, and movement patterns of migrating wild elephants.

Schedule:

Activity One:	Year 1 - 8
Activity Two:	Year 1 - 8
Activity Three:	Year 1 - 10

Objective Two: Develop district level strategic management intervention work plan and maintain all critical forest corridors (protection forest, production forest, community forest and collaborative managed forest) used by both resident and migratory herds in all Terai districts.

Rationale:

Human population and their activities are increasing rapidly throughout the elephant's range. In the west and far west Nepal, bonded laborers and landless clear natural forest for agricultural use. Such encroachment and forest degradation have intensified the conflict between people and elephants. Habitat loss increases the fragmentation of the remaining pockets of suitable habitat.

Output:

Maintenance of distirct - level elephant habitats and corridors that are identified and protected to prevent elephants from gaining access to crops, loss of life and property damages.

Activities:

1. Based on studies, reports, local interviews, and anecdotal oral history, define and detail potential forest corridors in all19 districts, where elephants range.
2. Using data from activities 1 and 3 of the Objective 1, identify and develop critical habitat corridors map for each district.
3. Develop 19 district level strategic management intervention work plans for wild elephants by curtailing human activities in forest corridors and elephant habitats.
4. Upgrade habitat and corridor maps at district level through bi - annual monitoring and ground - truthing.
5. In all protected areas where elephants occur, monitor elephant movements annually and conduct spatio - temporal analysis to notice any shift in their home range every 5 year to address elephant related issues through a five year management plan.

Schedule:

Activity One:	Year 1 - 5
Activity Two:	Year 1 - 8
Activity Three:	Year 1 - 5
Activity Four:	Year 3 - 10
Activity Five:	Year 5 - 10

Objective Three: Conserve elephants by reducing people - elephant conflict through best viable measures.

Rationale:

With rapid habitat loss, elephants live in close proximity to villages. Consequently, elephants raid crops and take refuge in the forests. Therefore, such behavioral shift perhaps, is an adaptation where agriculture fields sustain elephants seasonally. Local communities have used several means such as fire crackers, siren, torch lights, watch towers, firing gunshots into the air, burning chili and peppers, erecting wall and digging trenches, in their attempts to chase away elephants from their farms and houses. However, elephants get habituated and losses continue to incur. Reviewing current practices in Nepal, electric fence appears to be the top choice provided that they are maintained well at all times. Mriga Kunj Users' group of Bacchauli buffer zone VDC (village development committee), Chitwan has now nearly 21 km long electric fence (2 sites each by the buffer zone council and park management). Bardia has a 10 km long fence which is very effective. For a very large area, it may not be tenable. Perhaps watch tower, electric fence and elephant embankment could be the assorted methods to prevent them from getting into farms.

Realizing multiplying effect of elephant - relates losses and widespread retaliation, the Government of Nepal may soon have legal provision on compensation scheme. Meanwhile, it is imperative to protect those elephants in conflict with farmers from their retaliatory actions by providing appreciative compensation immediately for the loss of human lives outside protected areas.

Outcome:

A combination of methods with emphasis on electric fence to protect crops and homes, coupled with compensation scheme as statuary, alleviate grievances of resident communities. Awareness is created where a win - win situation is possible for both people and elephants.

Activities:

1 Institute a body of experts (legal practitioners, park managers, forest officials and independent experts, district development committee officials) to formulate legal foundation for the state on how to pay compensation, with district and village - level modalities that bear transparency and promptness as hallmark. Also, make compensation priority to those with loss of life, property damages to the landless and those farmers living the under the line of poverty.

2 Review annually and accordingly update the effectiveness of modality of compensation scheme and introduced technology.

3 Provide technical assistance, planning and encourage resident communities in erecting doable electric fence and backed by community - based maintenance committee on cost sharing basis.

4 Develop a contingency plan to contain large herds aided by a team of experts in handling wild elephants. Also, develop a clear policy guidelines within contingency plan, on how to contain individual animals when they turn rogue.

5 Conduct a biannual, national - level workshop to update district level stakeholders in updating them in new technology that can help in saving their crops from elephants and also share their success stories and lessons in failures.

Schedule:

Activity One:	Year 1 - 2
Activity Two:	Year 1 - 10
Activity Three:	Year 1 - 10
Activity Four:	Year 1 - 2
Activity Five:	Year 2 - 10

Objective Four:

Maintain viable populations of captive/domestic elephants by continuing breeding captive females with free ranging males to enhance heterozygosity in domestic progeny to benefit tourism and conservation education.

Rationale:

Captive elephants in Nepal do not appear to have a future in itself unless strategic management intervention is made. Preliminary models elsewhere have shown that, without supplementation from the wild, the captive population would decline rapidly. Conversely, there is potential for introduction diseases to the wild population when wild and captive elephants mingle.

Output:

Captive population is sustained and domestication of elephants is enhanced.

Activities:

1 Maintain and enhance the female elephant breeding output at Khorsor by developing a management guidelines for the breeding elephants and elephant handlers that safeguards animal welfare, and well being of the animal handlers through training, regular health check - up, stable socio - economic status.

2 Improve health care and management of all female captive elephants as they can potentially transmit their diseases, if any, to wild male elephants. As it has been established that Chitwan and Bardia captive females predominantly mate with the wild male, introduction of diseases is possible to the wild herd through adult males that mate with captive, diseased females. Develop and implement health action plan for curing tuberculosis and other diseases of captive elephants.

3 Acquire science - based knowledge on captive elephant population through: 1) population viability using birth - and death - rate data, and 2) elephant - forest dynamics to ascertain and predict the survival of the captive elephant population over time.

4 Consult, negotiate, and establish a haathisaar (elephant stable) for all privately owned elephants in Saurah, on cost sharing basis through buffer zone management initiatives. The objectives are: 1) reduce household damages by the wild male while visiting captive females in scattered areas, 2) improve elephant health and welfare; 3) avoid possibility of introduction of diseases to wild population, and 4) generate revenue by opening to visitors.

Schedule:

Activity One:	Year 1 - 10
Activity Two:	Year 1–10
Activity Three:	Year 5
Activity Four:	Year 1 - 3

5 Objective Five: Establish and strengthen a functional modality at local and central levels, between concerned agencies of India and Nepal, using existing bilateral cooperation, MIKE (Monitoring the Illegal Killing of Elephants) and CITES (Convention on International Trade in Endangered Species of wild Flora and Fauna) to address cross border elephant issues and dialogues and recommended solutions.

Rationale: As Nepal receives seasonal elephant visits in the east, west and far west, it is important to know their annual cycle, home range and ways to address elephant - human conflict.

Output: Wild elephants are protected through bi - lateral cooperation between Nepal and India.

Activities:

1 To advance current knowledge about Asian elephant landscape ecology and population biology, institute a bilateral elephant expert team, and complement through field studies in their respective countries, and share information.

2 Use the MIKE as platform as it is a site - based system (of 3 MIKE sites in Nepal to be identified, currently Suklaphanta is designated), to conduct cross border elephant dialogues through meetings to tackle technical issues and recommended solutions for respective Governments through appropriate cross border mechanisms.

Schedule:

Activity One:	Year 5 - 10
Activity Two:	Year 5 - 10

6 Objective Six: Build a greater and effective partnership between rural communities concerned government line agencies and conservation organizations to provide continual support to the people in elephant - related conflict and protect elephants.

Rationale: The survival of elephant has become a cross - sectoral issue. Therefore, building a cohort of stakeholders in these days of diminishing forest and dwindling funds is fundamental.

Output: A multi stakeholder steering committee is in place and activities for the Elephant Conservation Action Plan are implemented through the government agencies, community based organizations (CBOs), knowledge - based NGOs, INGOs and donors.

Activities:

1 Beside the Department of forest, Department of National Parks and Wildlife conservation, District Administration Office, District Development Committees, and Village Development Committees, identify and bring together community leaders, government officials, knowledge - based NGOs, elephant experts, and potential donors into Elephant Conservation Action Plan Steering Committee to forge the cost and effectiveness of the action plan.

2 Call all stakeholders to identify local, national and overseas institutions, and recommend them for action plan assignments and monitor their activities through Elephant Conservation Action Plan.

Schedule:

Activity One:	Year 1 - 10
Activity Two:	Year 1 - 10

Activity Schedule and Cost Estimate

Objective	Activities	0 - 5 Year	5 - 10 Year	Cost Estimate (US$)
1 Determine and monitor status of both resident and migrating elephant herds in all Terai districts of Nepal.	1 Determine population structure, composition and abundance of all four resident herds through in - depth field studies.			200,000
	2 Acquire knowledge on elephant landscape and population biology by using newly available genetic techniques and field ecology such as genetic fingerprinting, photographic capture - recapture survey to monitor survival rates, and satellite - tracking to determine optimal habitat areas.			200,000
	3 Working with Nepali and Indian regional experts, establish a range - wide satellite - tracking program to provide essential baseline information on area requirements, habitat selection, and movement patterns of migrating wild elephants.			200,000
2 Identify and maintain all critical forest and corridors used by both resident and migratory herds in all Terai districts	1 Based on studies, reports, local interviews, and anecdotal oral history, define and detail potential forest corridors in all19 districts, where elephants range.			50,000
	2 Using data from activities 1 and 3 of the Objective 1, identify and develop critical habitat corridors map for each district.			30,000
	3 Develop 19 district level strategic management intervention work plans for wild elephants by curtailing human activities in forest corridors and elephant habitats.			380,000
	4 Upgrade habitat and corridor maps at district level through bi - annual monitoring and ground - truthing.			50,000
	5 In all PAs where elephants occur, monitor elephant movements annually and conduct spatio - temporal analysis to notice any shift in their home range every 5 year to address elephant related issues through a five year management plan.			200,000
3 Conserve elephants by reducing people - elephant conflicts through best viable measures like electric fencing and compensation that alleviate human suffering.	1 Institute a body of experts (legal practitioners, park managers, forest officials and independent experts, district development committee officials) to formulate legal foundation for the state on how to pay compensation, with district and village - level modalities that bear transparency and promptness as hallmark. Also, make compensation priority to those with loss of life, property damages to the landless and those farmers living the under the line of poverty.			50,000
	2 Review annually and accordingly update the effectiveness of modality of compensation scheme and introduced technology.			1,000,000
	3 Provide technical assistance, planning and encourage resident communities in erecting doable electric fence and backed by community - based maintenance committee on cost sharing basis.			10,000
	4 Develop a contingency plan to contain large herds aided by a team of experts in handling wild elephants. Also, develop a clear policy guidelines within contingency plan, on how to contain individual animals when they turn rogue.			50,000
	5 Conduct a biannual, national - level workshop to update district level stakeholders in updating them in new technology that can help in saving their crops from elephants and also share their success stories and lessons in failures.			10,000

Objective		Activities	0 - 5 Year	5 - 10 Year	Cost Estimate (US$)
4 Maintain viable populations of captive/domestic elephants by continuing breeding captive females with free ranging males to enhance heterozygosity in domestic progeny to benefit tourism and conservation education	1	Maintain and enhance the female elephant breeding output at Khorsor by developing a management guidelines for the breeding elephants and elephant handlers that safeguards animal welfare, and well being of the animal handlers through training, regular health check - up, stable socio - economic status.			10,000
	2	Improve health care and management of all female captive elephants as they can potentially transmit their diseases, if any, to wild male elephants. As it has been established that Chitwan and Bardia captive females predominantly mate with the wild male, introduction of diseases is possible to the wild herd through adult males that mate with captive, diseased females. Develop and implement health action plan for curing tuberculosis and other diseases of captive elephants.			50,000
	3	Acquire science - based knowledge on captive elephant population through: 1) population viability using birth - and death - rate data, and 2) elephant - forest dynamics to ascertain and predict the survival of the captive elephant population over time.			40,000
	4	Consult, negotiate, and establish a haathisaar (elephant stable) for all privately owned elephants in Saurah, on cost sharing basis through buffer zone management initiatives. The objectives are: 1) reduce household damages by the wild male while visiting captive females in scattered areas, 2) improve elephant health and welfare; 3) avoid possibility of introduction of diseases to wild population, and 4) generate revenue by opening to visitors.			15,000
5 Establish and strengthen a functional modality at local and central levels, between concerned agencies of India and Nepal.	1	To advance current knowledge about Asian elephant landscape ecology and population biology, institute a bilateral elephant expert team, and complement through field studies in their respective countries, and share information.			50,000
	2	Use the MIKE as platform to conduct cross border elephant dialogues through meetings to tackle technical issues and recommended solutions for respective Governments through appropriate cross border mechanisms.			15,000
6 Build a greater and effective partnership between rural communities concerned government line agencies and conservation organizations to provide continual support to people and protect elephants	1	Beside the government agencies and, village development committees, identify and bring together community leaders, government officials, knowledge - based NGOs, elephant experts, and potential donors into Elephant Conservation Action Plan Steering Committee to forge the cost and effectiveness of the action plan.			50,000
	2	Call all stakeholders to identify local, national and overseas institutions, and recommend them for action plan assignments and monitor their activities through Elephant Conservation Action Plan.			15,000
Six Objectives		**Twenty one Activities**			**2,625,00**

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THE ELEPHANT CONSERVATION ACTION PLAN FOR NEPAL

LOGICAL FRAMEWORK APPROACH MATRIX

Narrative summary	Objectively Verifiable Indicator	Means of Verification	Assumptions
Goal			
Save Asian elephants in the wild from extinction, immediately address habitat loss and mitigate escalating people - elephant conflict in Nepal..	• At least current population (107 - 145 individuals) of Asian wild elephant in Nepal maintained. • Biological Corridor Connectivity in transborder between Katarniya Wildlife Sanctuary & BNP, Basanta between Dududhua & Kailali Krishnapur, Suklaphanta Wildlife Reserve between Manus India are maintained. • Victims of wild elephant damages are compensated by GoN. • Trans - border cooperation and initiatives between Nepal and India strengthened.	• Census report • Field observation • GIS data • Technical reports • Office reports • Database • Progress report • Research report • Office records • Monitoring data • Meeting minutes	• No large scale natural calamities (flood, landslides, epidemics) • Political stability and security situation remain normal • Cooperation of other agencies and people is achieved
Purpose 1			
Determine & monitor status of both resident and migrating wild elephant herds in all Terai districts of Nepal.	Population status of resident wild elephant in Nepal and migratory wild elephant herds from India known.	• Census report • GIS data • Technical reports • Office reports • Database • Progress report • Research report • Office records • Monitoring data • Meeting minutes	• Conservation partners support is available • Stakeholders cooperation is received • Fund is available
Outputs			
Science - based information on the elephant population and their herd dynamics.	Seasonal ecological monitoring and study records by trained human resource available.	• Census report • GIS data • Technical reports • Office reports • Database • Research report • Office records • Monitoring data • Meeting minutes	• Conservation partners support is available • Stakeholders cooperation is received • No limitation of fund

Narrative summary	Objectively Verifiable Indicator	Means of Verification	Assumptions
Activities			
1 Determine population structure, composition and abundance of resident wild elephant herds.	• Maintained central database with population structure, composition and abundance of resident wild elephant • Survey and monitoring equipments maintained	• Census report • Field observation • GIS data • Technical reports • Office reports • Computerized database • Progress report • Research report • Office records • Monitoring data • Meeting minutes • Survey schedule	• Conservation partners support are available • Stakeholders cooperation received • Sufficient fund made available
2 Acquire knowledge on elephant landscape and population biology of resident wild elephant herds.	• Maintained database on elephant landscape & population biology.		
3 Collect essential baseline information of migrating wild elephant.	• Database about the area requirement, habitat selection and movement pattern of migrating wild elephant & their ecological routes are maintained.		
4 Establish a range - wide satellite - tracking program incorporating Nepali and Indian regional experts.	• Maintained satellite - tracking records. • A joint committee between Nepal and India for satellite - tracking program formed. • Strengthen Central level, regional level and field level trans - border co - operation.		
Purpose 2			
Identify and maintain all critical forest corridors (protection forest, production forest, community forest and collaborative managed forest) used by both resident and migratory herds in all Terai districts.	• No decrease of suitable habitat for wild elephant with respect to baseline of 2007 (10,982.2 Km^2) • No increase of non-forest area with respect to baseline of 2007 (19,205.4 Km^2)	• Field observation • GIS data • Technical reports • Office reports • Database • Progress report • Research report • Office records • Monitoring data • Meeting minutes	• Conservation partners support made available • Stakeholders cooperation is received • Fund is made available
Outputs			
Strict maintenance of district - level elephant habitats and corridors that are identified and protected to prevent elephants from gaining access to crops, loss of life and property damages.	Improved condition of all critical forest corridors under effective management (protection forest, production forest, BZ, community forest, leasehold forestry & collaborative forest).	• Field observation • GIS data • Technical reports • Office reports • Database • Progress report • Research report • Office records • Monitoring data • Meeting minutes	• Conservation partners support is available • Stakeholders cooperation is received • Fund is available

Annex - Logical Framework

Narrative summary	Objectively Verifiable Indicator	Means of Verification	Assumptions
Activities			
1 Define and collect detail information about the potential forest corridors of wild elephant range.	Maintained database about the elephant ranging potential forest corridors of 19 districts.	• Census report • Field observation • GIS data • Technical reports • Office reports • Database • Progress report • Research report • Office records • Monitoring data • Meeting minutes • Survey schedule	• Support from conservation partners are made available • Stakeholders cooperation is received • Fund is available
2 Identify & prepare critical habitat and corridor maps for each district where elephant range.	Maintained verified satellite based GIS maps for each district.	• Field observation • GIS data • Technical reports • Database • Research report • Office records	• Support from conservation partners are made available • Stakeholders cooperation is received • Fund is available
3 Develop district level strategic management intervention work plans for wild elephants.	Formulated and implemented district level strategic management intervention work plans for wild elephant under DFO/NP/WR.	• Field observation • Office reports • Progress report • Office records • Monitoring data • Meeting minutes • Work plan	• Support from conservation partners are made available • Stakeholders cooperation is received • Fund is available
4 Upgrade habitat and corridor maps at district level.	• Implemented bi - annual habitat monitoring schedule. • Maintained ground - truthing data of 19 districts.	• Field observation • GIS data • Technical reports • Office reports • Database • Progress report • Research report • Office records • Monitoring data • Meeting minutes • Survey schedule	• Support from conservation partners are made available • Stakeholders cooperation is received • Fund is available

Annex - Logical Framework

Narrative summary	Objectively Verifiable Indicator	Means of Verification	Assumptions
Activities			
5 Monitor annual elephant movements in all PAs where elephant occurs. • Conduct spatio - temporal analysis. • Address elephant related issues through a five year management plan.	• Maintained database of elephant movement. • Prepared five year management plan addressing elephant related issues.	• Census report • Field observation • GIS data • Office reports • Database • Research report • Office records • Monitoring data • Management plan	• Support from conservation partners are made available • Stakeholders cooperation is received • Fund is available
Purpose 3			
Conserve elephants by reducing people–elephant conflict. through best viable measures.	Behavioral shift of the elephant and human.	• Census report • Field observation • GIS data • Technical reports • Office reports • Database • Progress report • Research report • Office records • Monitoring data	• Conservation partners support is available • Stakeholders cooperation is received • Fund is available
Outputs			
A combination of methods with emphasis on electric fence to protect crops and homes, coupled with compensation scheme as statuary, alleviate grievances of resident communities. Awareness is created where a win - win situation is possible for both people and elephants.	• 10% reduce in crop raiding by wild elephant with respect to baseline of 2007. • 10% reduce in household damage & human casualties. from wild elephant with respect to baseline of 2007. • 10% decrease in grievances of resident communities about wild elephant with respect to baseline of 2007. • The cropping pattern in the villages changed.	• Census report • Field observation • GIS data • Technical reports • Office reports • Database • Progress report • Research report • Office records • Monitoring data • Meeting minutes	• Conservation partners support is available • Stakeholders cooperation is received • Fund is available

Annex - Logical Framework

Narrative summary	Objectively Verifiable Indicator	Means of Verification	Assumptions
Activities			
1 Availability of fund and timely revision of Wildlife relief guideline of GoN.	District level committees to pay relief formulated.	• Office reports • Database • Progress report • Office records • Meeting minutes	• Conservation partners support is available • Stakeholders cooperation is received • Fund is available
2 Review and update the effectiveness of compensation modality.	Frequency of review meetings and discussion.	• Field observation • Office reports • Progress report • Office records • Meeting minutes	• Conservation partners support is available • Stakeholders cooperation is received • Fund is available
3 Encourage resident communities for electric fencing. • Provide technical assistance. • Form community - based electric fence maintenance committee on cost sharing basis.	• XX Km. of electric fence completed. • XX number of functional community - based electric fence maintenance committee (under DFO/NP/WR) formed.	• Field observation • Technical reports • Office reports • Database • Progress report • Office records • Meeting minutes • Financial report	• Conservation partners support is available • Stakeholders cooperation is received • Fund is available
4 Develop a contingency plan, incorporating a clear policy guide lines, to contain large herds.	A contingency plan aided by a team of experts in handling large herds of wild elephants formulated.	• Office reports • Progress report • Office records • Meeting minutes • Contingency plan	• Conservation partners support is available • Stakeholders cooperation is received • Fund is available
5 Conduct a biannual, national - level workshop to district level stakeholders in updating them in new technology that can help in saving their crops from elephants and share experiences.	• Frequency of meeting, discussion, workshop and number of participants increased in comparison to baseline of 2007. • Minutes of meeting and discussion.	• Field observation • Office reports • Database • Progress report • Office records • Meeting minutes • Proceedings	• Conservation partners support is available • Stakeholders cooperation is received • Fund is available

Annex - Logical Framework

Narrative summary	Objectively Verifiable Indicator	Means of Verification	Assumptions
Purpose 4			
Maintain viable populations of captive/domestic elephants by continuing breeding captive females with free ranging males to enhance heterozygosity in domestic progeny to benefit tourism and conservation education.	Breeding of captive female elephants with free ranging wild male increased.	• Office reports • Progress report • Technical report • Office records	• Conservation partners support is available • Stakeholders cooperation is received • Fund is available
Outputs			
Captive population is sustained and domestication of elephants is enhanced.	• 20 individuals of captive population increased. • 10 individuals number of domesticated calf from captive mother elephants increased.	• Field observation • Technical reports • Office reports • Database • Progress report • Office records • Monitoring data	• Conservation partners support is available • Stakeholders cooperation is received • Fund is available
Activities			
1 Maintain and enhance the female elephant breeding output in Hattisar of Nepal.	• Management guidelines for the breeding elephants & elephant handlers prepared & implemented. • Frequency of training organized for the animal handlers increased by 20%. • Frequency of health check - up record of animal handlers increased by 10%. • Survival rate of calf increased by 5% with respect to baseline of 2007 (93%).	• Field observation • Technical reports • Office reports • Database • Progress report • Office records • Training schedule	• Conservation partners support is available • Stakeholders cooperation is received • Fund is available
2 Improve health care and management of all female captive elephants.	• Frequency of health check - up schedule increased by 10%. • Maintained health check - up records of the captive elephant.	• Field observation • Technical reports • Office reports • Database • Progress report • Office records	• Conservation partners support is available • Stakeholders cooperation is received • Fund is available

Annex - Logical Framework

Narrative summary	Objectively Verifiable Indicator	Means of Verification	Assumptions
Activities			
3 Acquire science - based knowledge about population viability.	Maintained birth - and death - rate database.	• Field observation • Technical reports • Office reports • Database • Progress report • Office records	• Conservation partners support is available • Stakeholders cooperation is received • Fund is available
4 Acquire science - based knowledge about elephant - forest dynamics.	Maintained database about captive elephant and forest dynamics.	• Census report • Field observation • GIS data • Technical reports • Office reports • Database • Progress report • Research report • Office records • Monitoring data • Survey schedule	• Conservation partners support is available • Stakeholders cooperation is received • Fund is available
5 Establish a hattisar (elephant stable) for all privately owned elephants in Sauraha.	• 10% reeducation in household damages by the wild male. • Improved elephant health and welfare. • Generated revenue from the visitors.	• Field observation • Technical reports • Office reports • Database • Progress report • Office records • Monitoring data • Financial report	• Conservation partners support is available • Stakeholders cooperation is received • Fund is available
Purpose 5			
Establish and strengthen a functional modality at local and central levels, between concerned agencies of India and Nepal, using existing bilateral cooperation, MIKE (Monitoring the Illegal Killing of Elephants) and CITES (Convention on International Trade in Endagered Species of wild Flora and Fauna) to address cross border elephant issues and dialogues and recommended solutions.	• One National level, five regional and four field level trans - border meetings held each year.	• Office reports • Progress report • Office records • Meeting minutes	• Conservation partners support is available • Stakeholders cooperation is received • Fund is available

Annex - Logical Framework

Narrative summary	Objectively Verifiable Indicator	Means of Verification	Assumptions
Outputs			
Wild elephants are protected through bi - lateral cooperation between Nepal and India.	Current population (107 - 145) of wild elephant in Nepal maintained.	• Census report • Field observation • GIS data • Technical reports • Office reports • Database • Progress report • Research report • Office records • Monitoring data • Meeting minutes • Survey schedule	• Conservation partners support is available • Stakeholders cooperation is received • Fund is available
Activities			
1 Advance current knowledge about Asian wild elephant (both resident & migratory) landscape ecology and population biology.	• Formation of a functional bilateral elephant expert team. • Maintained regular monitoring schedules for wild elephant. • Maintained database.	• Census report • Field observation • GIS data • Technical reports • Office reports • Database • Progress report • Research report • Office records • Monitoring data • Meeting minutes	• Conservation partners support is available • Stakeholders cooperation is received • Fund is available
2 Use the MIKE as platform to conduct cross border elephant dialogues.	Joint regular trans - boundary efforts (meetings, information sharing, corresponding letters) increased.	• Office reports • Progress report • Office records • Meeting minutes	• Conservation partners support is available • Stakeholders cooperation is received • Fund is available

Annex - Logical Framework

Narrative summary	Objectively Verifiable Indicator	Means of Verification	Assumptions
Purpose 6			
Build a greater and effective partnership between rural communities concerned government line agencies and conservation organizations to provide continual support to people and protect elephants.	Annually four central level meetings with line agencies to discuss the elephant issue.	• Office reports • Progress report • Office records • Meeting minutes	• Conservation partners support is available • Stakeholders cooperation is received • Fund is available
Outputs			
A multi stakeholder committee is in place to implement the elephant action plan.	A committee with multiple stakeholder formulated.	• Office reports • Progress report • Office records • Meeting minutes	• Conservation partners support is available • Stakeholders cooperation is received • Fund is available
Activities			
1 Form ECAP (Elephant Conservation Action Plan) committee incorporating all line organization.	ECAP committee with incorporating concerned stakeholders formed.	• Office reports • Progress report • Office records • Meeting minutes	• Conservation partners support is available • Stakeholders cooperation is received • Fund is available
2 Provide action plan assignments for interested institution.	Annually 10 contracts provided for institutions working for elephant conservation.	• Office reports • Progress report • Office records • Contracts	• Conservation partners support is available • Stakeholders cooperation is received • Fund is available
3 Monitor the activities of action plan assignment.	Maintained monitoring schedule and reports.	• Office reports • Progress report • Office records • Monitoring schedule	• Conservation partners support is available • Stakeholders cooperation is received • Fund is available

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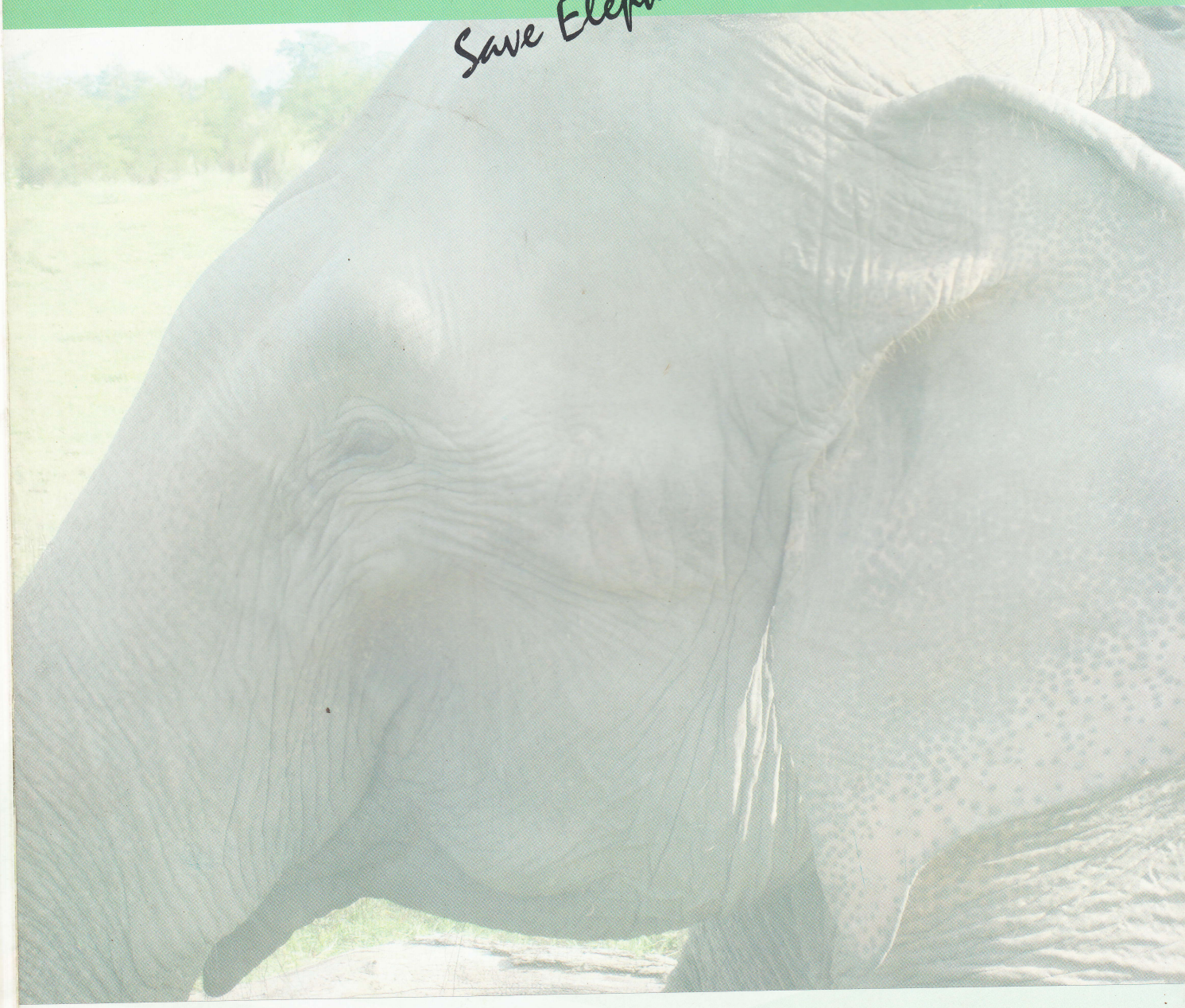
Save Elephant



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