Human - Elephant Relationships and Conflicts in Eastern Nepal

- Babu Ram Yadav “Gopali” *

Abstract

Six districts (*Jhapa, Illam, Morang, Sunsari, Saptari & Udayapur*) of Nepal and one district, Darjeeling of India were selected for the study of movement and migration of wild elephants. Direct field observations and meetings were conducted to identify the movement of elephants in the study areas. The numbers of the small and big herds were 10-13 and 50-74, respectively were identified. The big herd was raiding crops in *Bahundangi* Village Development Committee and Darjeeling district of West Bengal India, and the small herds were raiding crops from *Jhapa* to *Udayapur* districts . Asian Wild elephants demolished more than 500 huts and houses, killed about 100 people and more than 30 wild elephants have been also killed in 6 districts within 1.5 decade by human. The best solution of the problems is an alternate crop cultivation of tea, should be encouraged in Bahundangi VDC**.** Trans-boundary meeting between Nepal and India with respect to Human Elephant Conflicts should be carried out regularly. In addition Nepal Government, should create new protected areas, extend Koshi Tappu Wildlife Reserve in Eastern Nepal. An action research program on elephant and human conflicts should be implemented by attracting the International and National conservation partners. Economic loss US$ 54,567.00 of 1999 and US$ 52175.00 of 2001 were estimated. Farmers mostly in Wards 2,8, 9 6 1 (half part) of Bahundangi VDC who have elephant damage spend annually US$ 175.90 to 228.60 US$ to deter elephants. This paper is pulling out from "Asian Elephants People –Interface in Eastern Nepal” a research was held in Eastern Nepal in 2002.

1. Background

1.1 Evolution of Wild Elephants

The Asian wild elephant (*Elephas maximus*) is believed to have originated in Africa. The skeletal remains of Moeritherium of late Eocene Elephant (ca, 45 million years ago) were found in the Fayum in Africa. It was presumed to be a small squatty in shape and size-partly amphibious animal, which disported itself abundantly over the Nile delta during early Oligocene (ca, 38 million years ago). This is the oldest and most primitive wild elephant that grew up to the height of only two feet and possessed neither tusk nor trunk, but it had a soft snout resembling the appearance of a Tapir rather than like an elephant. Climax of evolution of wild elephants occurred in the Pleistocene when they were of eleven forms, *Mastodon, Stegolophodon, Stegodon, Mammuthus, Loxodonta, Elephas, Anancus, Stegomastodon, Notiomastodon, Cuverionius and Dintheriumy* (Sandarson 1963 in Ali 1990**).** They extended the range to every continent of the world except Australia, Antarctica and its associated Islands. However only one family Elephantidae of the order Proboscidea has been left to survive on the surface of the earth in the later course of time. This family is comprised of two genera-the *Loxodonta* and *Elephas* each with only one species.

The species *Loxodonta Africana* thrives in Africa and *Elephas maximus* inhabits Asia. They are generally referred to as African and Asian elephants respectively. African bull elephants are known to grow up to 366 cm in height and cow elephants to 308 cm while the Asian bulls seldom grow, with a few exceptions, up to 305 cm and the average height being 275 cm. The height of an elephant is estimated by measuring the circumference of the print of its fore foot. In general twice the circumference of footprints gives the approximate height of the elephant at the shoulder. Asian ear flaps measure as big as 61 cm with four visible toes-nails on each hind foot while the ear of African elephant is much bigger, measuring 183 cm across, and three with toe-nail on each hind foot.

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1.2 Population status and distribution

The estimated population of Asian wild elephants in Asia ranges between 41,429 and 52,250 and cover a areas of range countries is 17,465,910 km2, and areas of elephant Range is 486,800 km^2 **(**Sukumar 2003). Table 1 displays different population estimates.

Table : Estimated number of Asian elephants and their distribution

Name of Regions	Minimum Number	Maximum	Country
Indian Sub-Continents	26,390	30,770	India
	109	130	Nepal
	250	500	Bhutan
	150	250	Bangladeh
	2,500	4,000	Sri Lanka
Total	**29,399**	**35,650**	
Indo-China + China	500	1,000	Laos
	250	500	Cambodia
	70	150	Vietnam
	200	250	China
Total	**1,030**	**1,900**	
Indo-Malayan	4,000	5,000	Myanmar
	2,500	3,200	Thailand
	2,100	3,100	Malaysia
	2,400	3,400	Indonesia
Total	11,000	14,700	
Grand Total	**41429**	**52,250**	

Sources: Sukumar (2003). The Living Elephants Evolutionary Ecology, Behaviour and Conservation

There are fewer than 1,000 African elephants in captivity, most of them in Western zoos. An estimated 14,500-15000 *Elephas maximus* are in captivity in the range states (Sukumar 2003).

1.2.1 Elephants found in and around the forest and Protected areas of Nepal

Table 1: Population distribution of Asian wild elephants in Nepal

Name of Protected Areas	Number of Wild Elephants	Areas	Development Regions
Shukalaphanta Wildlife Reserve	12-18 (Thaguna, 1999)	305 Km^2	Far-Western Development
Bardya National Parks	70-80 (Pradhan, 2003)	968 Km^2	Mid-Far Western Development
Parsa Wildlife Reserve	25-30 (Mishra & Smith, 1992), 40-50 (PWR 2007)	499 Km^2	Central Development
Eastern Terai including Koshi Tappu Wildlife Reserve	10-13 (Yadav, 2002)	175 Km^2	Eastern Development
Transboundary elephants population, Mahananda Wilflife Reserve and Nepal eastern border	50-75 (Yadav 2002), and per comm. DFO, ADFO, Ranger Darjeeling District 2002)	NA	West Bengal, Darjeeling District of India and Nepal Eastern Border

Sources: Yadav 2002 and Department of National Parks and Wildlife Conservation Kathmandu, Nepal

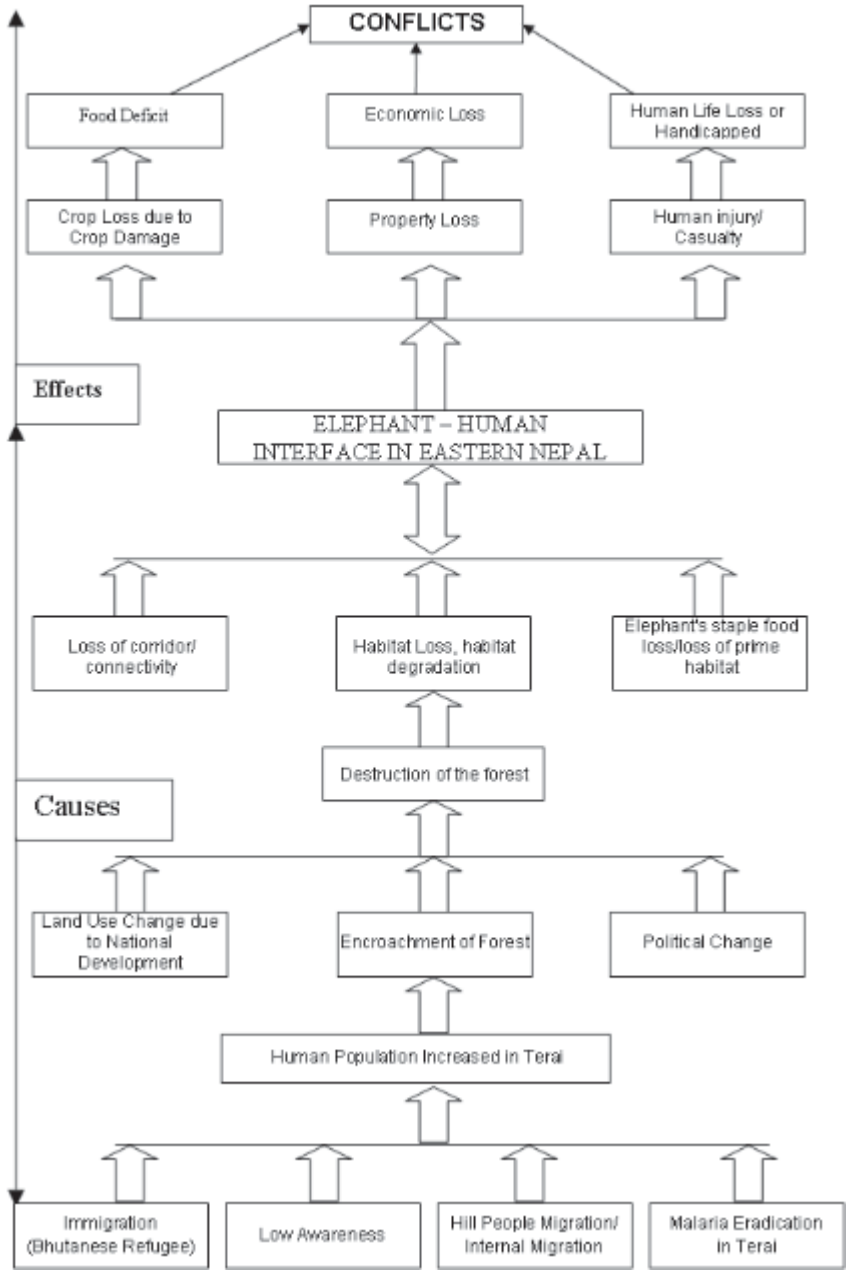
1.3 Major Human Elephants Conflicts in Eastern Nepal

Habitat destruction of wild elephants, Malaria eradication (1950s) and resettlement program and construction of Mahendra East-West Highway and other sub-highways These socio-economic activities resulted in destruction of a large proportion of forest areas in the Terai thereby reducing the habitat for the wild elephants (Shrestha 1979).

1.3.1 Major Problems by Asian elephants

Rice, Beetle nuts, Millets, Maize, sugarcane and Banana are damage by big herds of 50-74 crop season migratory generally raiding in Bahundangi VDC of Jhapa district. A residential small herd 10-13 damages the above mentioned crops from Jhapa to Udayapur districts. More than 500 houses and huts, Carts, motorcycle, Television, Bucket and cooking utensils have been destroyed by wild elephants in eastern Nepal. More than 100 people have been killed many people are become handicap due to wild elephant attack .

Problem tree: Figure 1. Model of elephant –human interface in eastern Terai gives the HEC in the Terai of Nepal



2. Materials and Methods

Fieldwork was conducted from mid August 2001 through mid January 2002. Focus group and semi-structured interviews were carried out to collect data through rapid assessment in East Terai including in Darjeeling district of India. Night visits were also made to observe how the farmers guard their fields against wild elephants. Ten percent of the households in each ward of Bahundangi Village Development Committee (BVDC) were randomly selected giving a total sample size of 333 households. Focus groups such as night guarding group's schoolteachers, local institutions and community forest user groups were interviewed. To find out the relation between crop damage/property loss and distance form elephants habitat, a simple linear regression was carried out. Paired t-tests were carried out to compare economic loss per household due to crop damage by elephants in 2001 and the economic loss due to the crop damage and property loss per household in 1999.

4. Results

4.1 Elephant distribution and numbers

On the basis of fieldwork I interpreted those findings to refer to two separate herds. The big herd was estimated 50-74 animals with 15 tuskers and 7 calves. The big herd had concentrated close to the Bahundangi VDC and across the Nepal -India border. The small herd (12-13) has been roaming from *Jhapa* district to *Udayapur* district.

4.2 Human and elephants killings

The number of 66-killed person might be plus (+) or minus (-) 10 percent out of the total killed person. 16 people in Darjeeling district in India have been killed so far. See Table 2

Table 2: Number of people killed by elephants in Eastern Nepal

Districts	Persons Killed	Period killed	Killed/Year since 1986
Jhapa	26	1986-2002	1.6
Morang	8	1988-2001	0.6
Sunsari	15	1990-1999	1.7
Sapatari	4	1989-2001	0.3
Udayapur	12	1986-1999	0.9
Total	66		
Darjeeling, India	16	2001 & 2002	16

Source: Yadav , 2002

4.3 Elephant killel by human

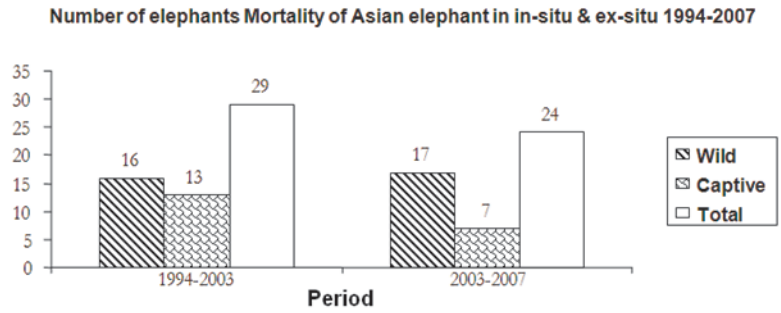
Nepal Government had culled five elephants in Jhapa district to protect the people's properties and lives (Smith and Mishra 1992, and pers comm. farmers and local leaders). Electrocution killed three elephants. Muzzle-loaded guns kill some and rest was killed in the encounters during agriculture crops guarding. See table 3

Table 3: Number of elephants killed in East Nepal

Districts	Elephants killed	Calf	Year	Period
Darjeeling district , India	3		2001	2001
Jhapa	13	1	1980 -2001	10-15 years
Morang	1		NA	
Sunsari	2 +1	1	NA	+1 September 2003
Saptari	NA		NA	
Udayapur	1		NA	

Sources: Source: Yadav, 2002
Data in the table are approximate (excluding Darjeeling district. India). NA = not available

4.3.1 Recent Data (1994-2007) elephant mortality in Nepal



4.4 Economics loss due to elephants at Bahundangi VDC of Jhapa district

4.4.1 Crops damage and economic loss in Bahundangi VDC

The major cereals cultivated in *Bahundangi* VDC were rice, maize, wheat, and millets. The other common crops are banana, beetle nut, coconuts, ginger and *and Simal Tarul* (Cassava*).* Broom grass and bamboo are the major agro-forestry species. Figure 1 shows the estimated economic loss due to damage in above mentioned crops, property and assets such as houses, kitchens, cooking utensils and television by elephants , the economic loss year 2001 (33,669 U$) was less than in the year 1999 (54,567 U$).

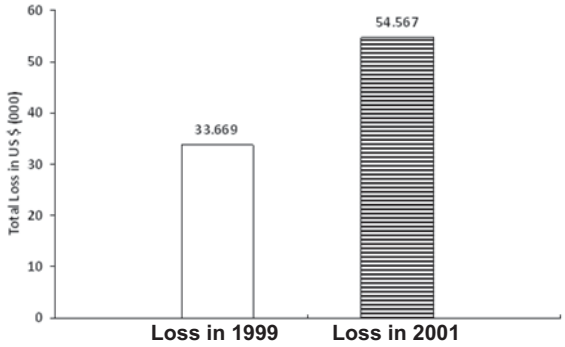


Figure 1: The total estimated economic loss in Bahundangi VDC in 1999 (properties losses included) and in 2001 (crop damage only) done by wild elephants.

5. Management Recommendations

Management implications are divided into three sectors such as Sector I- *Bahundangi* VDC, Sector II- Jhapa to Udayapur districts, and Sector III- Responsible Institutions.

5.1 Sector I: Bahundangi VDC

Each guarding group needs training on controlling and chasing elephants from their crop fields. The armed guards from police office and DFO should be mixed in guarding group. The following measures can be implemented for controlling the wild elephants.

- Training to local farmers/Guarding groups,
- Scaring Devices,
- Night vision binocular
- Provision of shot gun to the local farmers

5.1.1 Physical Infrastructure development

The following infrastructure can be constructing for controlling the wild elephants. Guarding tower establishment, Tea leaves collection centre, Electrification in *Bahundangi*

Village Development Committee, Solar fencing along the *Mechi* River Bank, Dyke Construction along the *Mechi* River Bank.

5.1.2 Alternate Crops

Tea cultivation along the *Mechi* Riverside instead of agricultural crops, management of staple foods for elephants in the forest and community forest should be encouraged.

5.1.3 Provision of Compensation

A provision of compensation of the crop damage, property damage, and human casualty and Injuries needed to be made. A separate law for compensation should be implemented.

5.2 Sector II: Jhapa to Udayapur district

The district forest office of Jhapa, Morang, Sunsari , Saptari, Udayapur and Koshi Tappu wildlife reserve should be managed the following equipments and domesticated elephants to deter the wild elephants.

- Vehicles with special siren , Search lights , shotgun with bullets , Field Gears, such as tent, sleeping bags and utensils etc.
- At least 10 elephants of Koshi Tappu Wildlife Reserve should be equipped to chase the wild elephants

5.3 Sector III: Responsible Institutions

Forests Corridors Management in Eastern Nepal, translocation of rogues /culling, relocation of people from the forest, Inter-disciplinary cooperation, Transboundary cooperation between India and Nepal should be carried out frequently; local level Trans-boundary cooperation should be conducted every month in the crop season.

An additional establishment of Protected Areas (PA) in eastern Nepal, Implementation of “Elephants -people interface Project” in Jhapa district to Udayapur district, extension of Koshi Tappu Wildlife Reserve (KTWR), Awareness program among local farmers should be implemented, His majesty Government of Nepal allocated the emergency funds in the five District Forest Offices as well as in KTWR to resolve the elephant and human conflicts.

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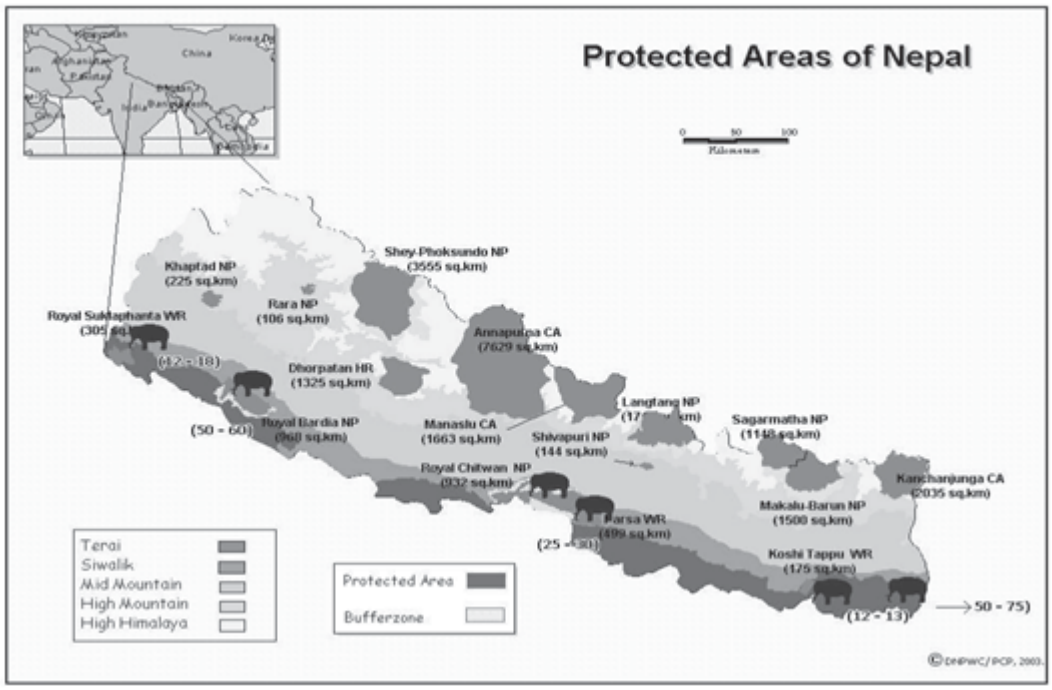
Annex 1: map showing the Protected Areas and Elephants distribution in Nepal



MELTING ICE; A HOT TOPIC.