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TRANSBOUNDARY MOVEMENT OF ELEPHANTS IN EASTERN NEPAL

by N.G. Baidya

Introduction

Asian elephants (*Elephas maximus*) occur in four places in Nepal. The seasonal migrating elephants that move from West Bengal, India to Bahundangi of Jhapa, i.e., the eastern population, numbers 50-70 individuals and there is a resident herd of 10-13 individuals (Elephant Action Plan, 2007); the central population (40-50 individuals) is confined to Parsa Wildlife Reserve and recently has moved outside the reserve; the mid-west population of 70-80 individuals resides in Bardia National Park (Pradhan, 2007), while the far western population of 2-18 elephants are found in the Churia foothills (Velde, 1997).

Elephants from Assam, India, migrate to eastern Nepal, passing through the plains of Darjeeling district of West Bengal, India, in search of food and shelter. Thirty-four percent of the total forest area falls in the protected areas of West Bengal, comprising 15 wildlife sanctuaries, 5 national parks and 2 tiger reserves. Darjeeling Wildlife Division One, Kurseong Forest Division and Mahananda Wildlife Sanctuary lie in the migration route of the elephants (<http://westbengalforest.gov.in>). Kurseong forest divisions are contiguous with the Mechi-River on the eastern border of Nepal with

tropical broad leaf forest where the elephants migrate to Nepal.

Their nodal point of entry is Bahundangi, Jhapa district. During migration these elephants cause much damage to property and life because the migration corridors are fragmented and used for human settlements and agricultural purposes. As a result, elephants are killed, crops damaged and human lives lost.

Study area

The study area is located in the three administrative districts namely Sunsari, Morang and Jhapa between 86° 53' 48" to 88° 11' 33" longitude and 26° 20' 33" to 26° 53' 132" latitude. These three districts cover an area of 4,718 km² (Jhapa: 1,606 km², Morang: 1,855 km² and Sunsari: 1,257 km²) which is 3.20% of the total land coverage (147,181 km²) of the country. These districts used to be a contiguous forest area and a free moving route for wild elephants before malaria was eradicated in the 1960s. Forest has been fragmented time and again whenever there is political instability and the settlement of emigrants from the hilly region and population growth are the main factors accelerating human-elephant conflicts (HEC).

Table 1: Forest cover in 1991 and 2001

District	Forest cover in 1991 (area in ha.)	Forest cover in 2001 (area in ha.)	Change in forest cover (area in ha)	Change %
Sunsari	21659	21365	-294	-0.14
Morang	45718	45184	-534	-0.12
Jhapa	21274	21000	-274	-0.13

Source: DoF, 2005

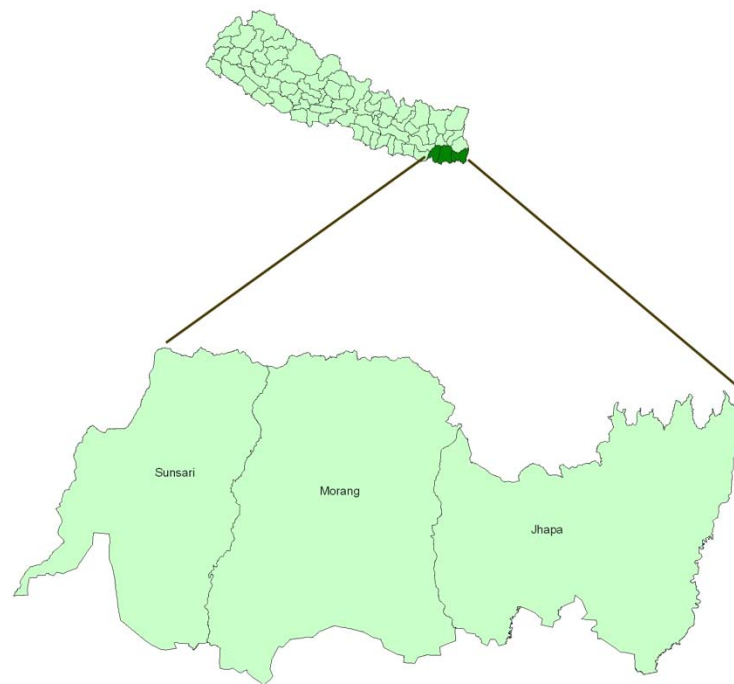


Fig.1: Study area

Jhapa has the least forest cover area amongst all 20 districts of the terai region, which is 12.9% of the total land area, whereas Morang and Sunsari have 24.5% and 18.1% forest cover respectively. In all three districts forests have been decreased and degraded from 1991-2001 (Table 1). According to the locals, deforestation and encroachment of forest area has continued to date, thus, figures mentioned in the table might have changed significantly by now. In 2001, 4,670 ha out of a total 21,000 ha of forest in Jhapa were categorized as degraded forest. Similarly, 6,838 ha and 2,288 ha of forest were categorized as degraded forest in Morang and Sunsari districts respectively.

Present status

Though human-elephant conflicts in this area are quite a new phenomenon, every year 5-10 people and 3-4 elephants lose their lives to the conflict. Now, elephants must use a route fragmented by agricultural land and villages, thus aggravating the conflict. While migrating, elephants are in constant danger and the possibility of crop raiding and damage to life and property of marginalized people is also high.

Human-elephant conflicts in Jhapa district, especially in Bahundangi, were the highest. Agricultural lands were raided by elephants and crops destroyed. It was found that the main crop raiding season is from December to January, as this is the harvest time, and during the monsoon, i.e., June to July. In July 2009, a herd of elephants entered Bahundangi and raided agricultural fields. While chasing away the elephants a few individuals, including two police personnel, were injured and a baby elephant was killed. The dead body of the calf was taken to the District Forest Office, Chandragadi, for a post-mortem. Mitigation measures such as the installation of solar fences and awareness programs conducted in the region lessened the conflict during 2008-2009, but problems still persist.

Although the solar fencing was a buffer to migrating elephants, human-elephant conflicts in the region appear to arise from resident wild elephants. Three wild elephants have been seen in Jhapa and Morang district, while 5 have been observed in Sunsari district.

Most local farmers think that the existing conflicts should be addressed through governmental bodies. In order to draw the attention of policy makers

WCN conducted meetings with the Ministry of Forest and Soil Conservation and its concerned departments regarding a compensation scheme for victims injured by wildlife and for crop damage. A proper mechanism must be developed so that compensation to the victims would lessen the conflict and encourage people towards protection and conservation. The government has endorsed the compensation scheme to provide money to those injured or killed by elephants.

Analysis

For the conservation of elephants in the long run, the identification of migration routes and developing corridors encompassing the elephant migration route is the most important task. Route identification is done by recording GPS points where primary and secondary evidence of human-elephant conflicts and the presence of elephants

are noticed. After collecting enough data in all three districts, point maps were created and overlaid on the district map and Lansat imagery of three districts using ARCVIEW 3.2 and Ilwis 3.2 software gives the exact elephant migrating route. When VDCs with recorded human-elephant conflict incidents were plotted against the migrating route, it gave a clear picture that the conflict is higher in the region where forests are fragmented. The highest number of human-elephant conflicts are in Jhapa district, followed by Sunsari district. Morang district has the least human-elephant conflicts as there is more forest coverage than in the other districts (Table 1) although the coverage is decreasing. It is very crucial to protect the remaining forest, otherwise human-elephant conflicts will be on the rise and will have a negative impact on the conservation of wild elephants in this region.

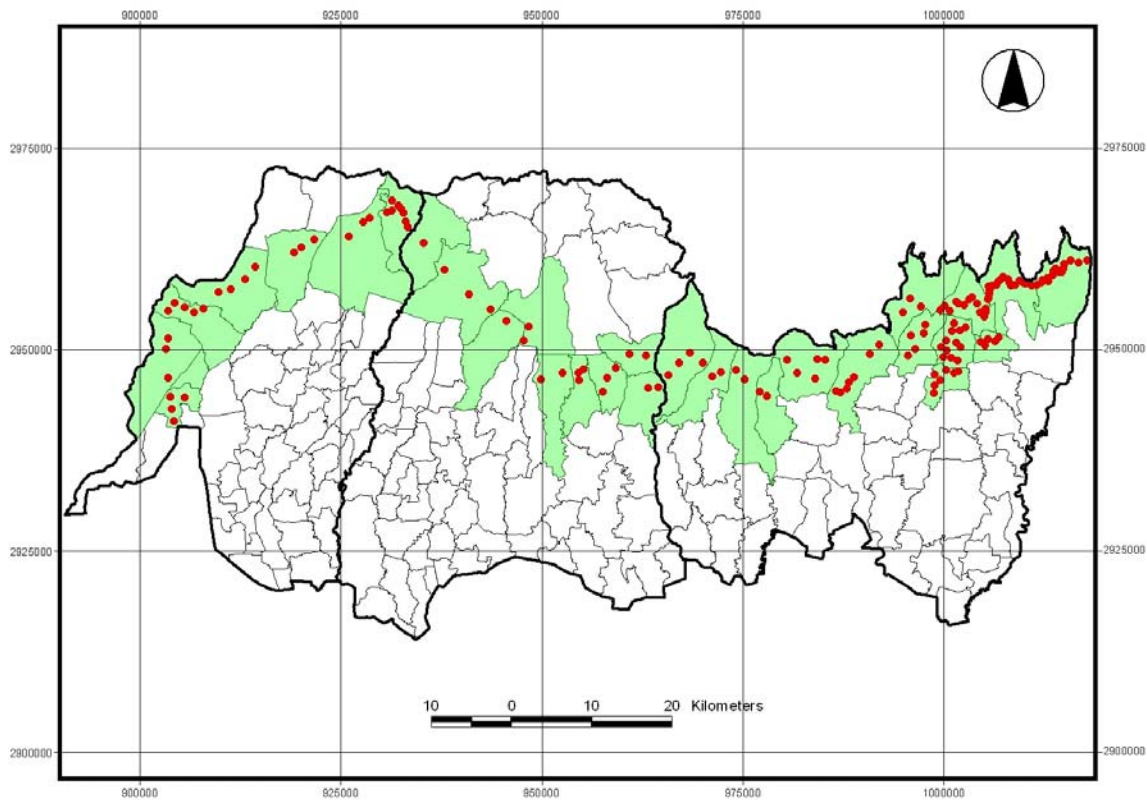


Fig 2: GPS data showing elephant route through 31 VDCs

Awareness in communities to avoid human-elephant conflicts

Over a period of one year, WCN has been successful in conducting different awareness programs at the community level by involving local youths after they were provided with leadership training. During outreach programs to communities and students, documentaries were screened and the participants were involved in various hands-on activities. To reach out to a wide audience from different walks of life and to generate awareness at the policy level for the conservation of wild elephant, public interaction meetings, seminars and workshops were conducted. Waterholes were also constructed in eight locations within the elephant migration route to prevent wild elephants in the forest from coming out in search of water during the drought season. A story writing competition was also conducted in which more than 500 students participated. The winning story was published in the form of a story book in partnership with INGO Room and will be distributed to more than 150,000 students in the country. This story has been able to showcase the perception of locals that live at the front line with human-elephant conflicts.

Final output and recommendation

This study shows that Bahundangi, Jhapa is the main entry point of the migrating elephant herds. It was found that wild herds enter through a village in Bahundangi to reach the nearby forest (Telpani CF) north-west to Bahundangi. Most of the herds were checked at this point by locals using crackers, fires and drums, thus the highest number of human-elephant conflicts have been recorded in Jhapa compared to the rest of the districts. This is the crucial time during which loss of life and property occurs. Only some solitary male elephants cross this VDC and move towards other districts. In Sunsari district human-elephant conflicts are highest in Prakashpur VDC and Kushaha VDC as Koshi Tappu Wildlife Reserve is situated in this VDC and is home to five female domestic elephants. These elephants are used for patrolling the reserve by game scouts and enforcement officers. They are also used to carry tourists and conservationists. Wild male elephants from Ramdhuni Community forest come to Kushaha

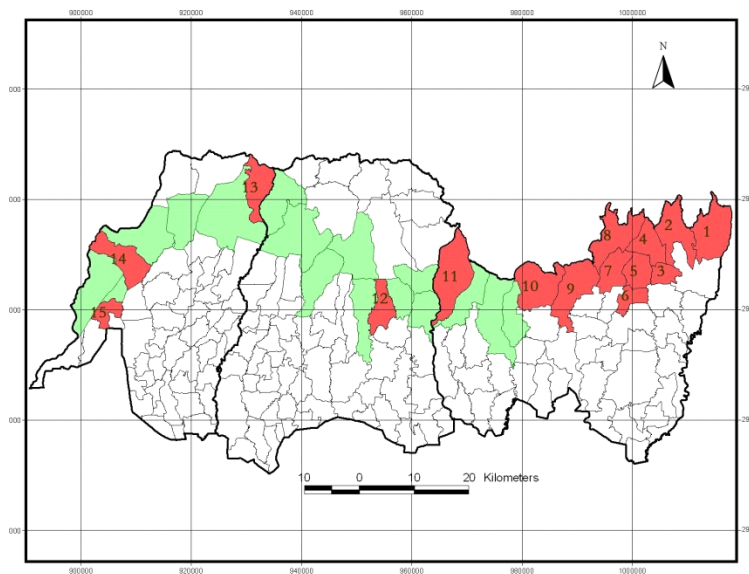
hattisar to mate with the domestic females. Morang district faces the least amount of human-elephant conflict in the region.

Thirty-one VDCs fall under the migratory route of the elephants and 15 VDCs have been identified with high rates of human-elephant conflicts (Fig 3). The elephant population in eastern Nepal is under intense pressure for survival because the habitat has shrunk. Deforestation and rampant encroachment are major causes of human-elephant conflicts. Elephant habitat fragmentation and crop depredations along with human and elephant deaths due to the conflict has resulted in an antagonistic view by communities towards elephant.

Such a detailed study has not been previously carried out in eastern Nepal.

An elephant corridor should be developed encompassing the elephant route and different programs promoting co-existence should be launched in the region in order to conserve wild elephants in eastern Nepal.

The human-elephant conflicts have grabbed the attention of GOs and NGOs in the region. The Government has allocated budgets for different measures to mitigate the conflict, but unfortunately without vision and proper study. The budget is mostly spent on the construction of roads and other infrastructure and the installation of solar fences which attract more people from other regions to the area, which in fact results in further habitat fragmentation and higher human-elephant conflicts. Solar fences have been installed in the region without proper study. The solar fence installed on the bank of Mechi River actually blocked the traditional migrating route of elephants. Such fences should be designed to protect villages rather than blocking the migration route of the elephants.

**VDCs with recorded HEC**

- 1 Bahundangi VDC, Jhapa
- 2 Shantinagar VDC, Jhapa
- 3 Dhajjan VDC, Jhapa
- 4 Budhabare VDC, Jhapa
- 5 Sanischare VDC, Jhapa
- 6 Anarmani VDC, Jhapa
- 7 Arjundhara VDC, Jhapa
- 8 Khudunabari VDC, Jhapa
- 9 Surunga VDC, Jhapa
- 10 Satashidham VDC, Jhapa
- 11 Damak Municipality, Jhapa
- 12 Sanischare VDC, Morang
- 13 Panchkanya VDC, Sunsari
- 14 Prakashpur VDC, Sunsari
- 15 Kushaha VDC, Sunsari

Fig 3 : VDCs that lies in elephant migrating routes and with recorded HEC

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