It took the deaths of 22 elephants by poisoning in 2001 and 2002 to draw attention to the prevailing human-elephant conflict in the north eastern state of Assam. The conflict had reached such proportions around Nameri National Park that the elephant, that was once revered as Ganesha by the villagers, had now turned tormentor that deserved to be eliminated. An investigation that was carried out in the region looked into reasons for the declining tolerance of the villagers and recommended immediate measures, as well as, a long-term strategy to tackle this problem.

Nidhi Gureja, Vivek Menon, Prabal Sarkar and Sunil Subba Kyarong
Wildlife Trust of India (WTI), is a non-profit conservation organisation, committed to help conserve nature, especially endangered species and threatened habitats, in partnership with communities and governments. Its principal concerns are crisis management and the provision of quick, efficient aid to those areas that require it the most. In the longer term it hopes to achieve, through proactive reforms, an atmosphere conducive to conserving India's wildlife and its habitat.

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Nidhi Gureja: Fig. 7, Fig. 9
GANESHA TO BIN LADEN

Human-Elephant Conflict in Sonitpur District of Assam

Nidhi Gureja, Vivek Menon, Prabal Sarkar, and Sunil Subba Kyarong

March, 2002

An Occasional Report of a Wild Species project
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Human-elephant conflict poses a considerable threat to the population of the Asian elephant (*Elephas maximus*) that is already on the brink of extinction due to poaching for ivory, habitat loss and fragmentation. The extensive alteration of elephant habitat by human population is forcing the species to confine themselves into small pockets of land that are connected only by human settlements. Wherever humans live in the vicinity of wildlife habitats, there will be some degree of conflict, often leading due to the death of elephants.

Approximately 11,000 of the estimated 25,000 to 27,000 wild Asian elephants of India occur in the North East alone. In 2001-02, a spate of poisonings shook the conservation world. It is indeed a distressing fact that it took the deaths of at least 22 elephants to draw attention to a problem that is not limited only to the Northeast but widespread across the elephant distribution range. While government, organizations and individuals are on the international battlefield fighting the resumption of the ivory trade, the threat of escalating human-elephant conflict is a reality that is becoming more daunting day-by-day. If there was ever a time to review our conservation strategies and take a resilient stand, the time is now. A precedent has been set, elephants were killed, no person was charged, and encroachment is occurring blatantly with no seeming political will to stop it.

This report has shown an area in India where the famed tolerance has eroded changing the elephant from Lord Ganesha to Osama Bin Laden. Unless conflict situations such as this are prevented by quick, pro-active solutions to the problems of those living in proximity to wildlife, the attitude of people will necessarily change. And the losers of such a change would be the wildlife of the area, elephants being a prominent example of this.

Vivek Menon  
Executive Director,  
Wildlife Trust of India
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EXECUTIVE SUMMARY

The Asian elephant is an endangered species as listed by IUCN Red List. While globally, the Asian elephant population ranges between 35,000 to 55,000, the total population of wild elephants in India is between 25,000 and 27,000. Northeast India is home to about 11,000 elephants.

The Asian elephant whose survival is challenged on account of poaching for ivory, habitat loss, fragmentation and alteration also faces considerable threats from conflict with humans. Wherever humans live in the vicinity of wildlife habitats, there is some degree of human-elephant conflict. The damage incurred by humans due to conflict may include economic losses of crops, property or livelihood opportunities, and occasionally bodily harm or even death. This often invokes a sense of frustration and anger which could manifest itself in vengeance.

Between July and November 2001, at least seventeen elephants and at least five more during the same months in 2002 were found dead in Sonitpur district of Assam, with the greatest concentration being in and around Nameri National Park. The Wildlife Trust of India carried out an assessment of the situation by making actual site visits.

Based on the evidence from the site of the deaths, investigating the carcasses found in and around Tezpur and toxicology reports from the Department of Pathology of College of Veterinary Science, Guwahati it was found that the deaths were being caused due to poisoning by an organophosphorous pesticide. There were also other deaths where poisoning could not be confirmed. However, circumstantial evidence supports the hypothesis that the elephants that were recorded as having died of disease could in fact have died of poisoning considering the time
period during which the deaths occurred and the sites where the
carcasses were found. Therefore, while the confirmed tally is 14, the final
tally may be as high as 22 elephants poisoned to death between May and

Attempts were also made to determine the method used to poison the
elephants. Findings supported the hypothesis that the poison could have
been mixed with country made liquor. It is possible that the culprits are
local villagers or tea garden labourers. The reason for the poisonings is
most likely to be elephants causing destruction to crops, property and life
on a regular basis.

Information was also collected on elephant movement which affects
human settlements. Three prominent routes were identified. It was also
found that elephants in search of food and water come into direct conflict
with the encroachers of forests.

The survey also looked into issues like different response to the elephant
deaths, disposal of carcasses, eviction of the encroachers, relationship
between the Wildlife and Territorial Forest Divisions, actions taken by the
district administration, NGOs and the media response.

Based on the observations in the field and discussions with the Forest
department staff and villagers, the following actions are recommended:

**Formation of watcher squads in conjunction with the Forest
Department**: WTI has been involved in a fairly cost-effective volunteer
run watcher scheme in Seijosa in Pakhui Wildlife Sanctuary. In
collaboration with the Forest Department, local villagers and a local NGO,
this watchers scheme is based on a certain number of watchers being
appointed on a rotation basis and being paid a nominal amount by WTI, with twice the number of volunteers being appointed by the village committee. WTI can facilitate local NGOs, villagers and Forest Department to form similar squads.

**Enforcement**: Legal action must be taken up against individuals involved in activities that can kill elephants. Pesticides such as Demecron must be banned locally or controlled.

**Conflict resolution**: There was blatant hostility towards the Forest Department because of what the villagers felt a complete lack of interest and nonchalant attitude towards their plight. Some expressed their amazement at the lack of visible action by the Forest Department and other governmental agencies in response to the illegal felling and clearing of forests which they consider the root cause of the problem, but on the other hand, the willingness to prosecute a few villagers trying to defend themselves, their families, and their source of livelihood from elephants. Driven by frustration and faced by indifference from the Forest Department, they are desperate for a solution. Thus, a network of NGOs, villager committees and governmental agencies needs to be created and fortified with interactive exchange of information and monitoring of the situation.

**Eviction of Encroachment**: The issue of encroachment needs to be addressed with priority. Even if eviction is to be implemented by the government, measures must be in place to prevent re-encroachment of the area.
1. INTRODUCTION

1.1 Background

The Asian elephant (*Elephas maximus*) is an endangered species as listed by the IUCN Red List. In India, the species is protected under Schedule-I of the Wildlife (Protection) Act, 1972. While globally, the Asian elephant population ranges between 35,000 to 55,000, the total population of wild elephants in India is between 25,000 and 27,000 (Sukumar & Santiapillai, 1996). Approximately 11,000 individuals of the species (almost one-fourth of the total global population) occur in Northeast India (Choudhury, 1999).

Human-elephant conflict poses considerable threat to the population of the Asian elephant (*Elephas maximus*), which is already threatened by extinction on account of poaching for ivory and habitat loss, fragmentation and alteration. Approximately 20% of the global human population resides near or in the present range of the Asian elephant (WWF Species Status Report, 2000). The extensive alteration of elephant habitat by human population is forcing the species to confine themselves into small pockets of land that are connected only by human settlements. These pockets are inadequate to meet the food, water and security needs of elephant. As elephants have very distinct movement patterns by which they seasonally utilize optimum habitats, it is likely that during this movement, they will come into contact with settlements (Sukumar, 1986).

Wherever humans live in the vicinity of wildlife habitats, there will be some degree of conflict, often leading due to the death of elephants (Table 1). However, elephants are increasingly being regarded as pests, the latter, in this respect, being typically defined as any animal, bird or insect that feeds on crops, at any point of the agricultural cycle (Naughton
et al. 1999). The damage incurred by humans due to conflict may include economic losses of crops, property or livelihood opportunities, and occasionally bodily harm or even death. This naturally invokes a sense of frustration and anger, which could manifest itself in direct conflict.

Table 1: Number of elephant deaths due to human-elephant conflict in India, 1997-2001

<table>
<thead>
<tr>
<th>Year</th>
<th>1997</th>
<th>1998</th>
<th>1999</th>
<th>2000</th>
<th>2001</th>
</tr>
</thead>
<tbody>
<tr>
<td>Confirmed</td>
<td>29</td>
<td>38</td>
<td>17</td>
<td>28</td>
<td>55</td>
</tr>
<tr>
<td>Probable</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>8</td>
</tr>
<tr>
<td>TOTAL</td>
<td>29</td>
<td>38</td>
<td>17</td>
<td>28</td>
<td>63</td>
</tr>
</tbody>
</table>

Source: Wildlife Trust of India, Elephant Mortality Database

In many parts of the country, it is due to ethical and cultural beliefs that the tolerance of farmers has withstood the time that it has; however, probably not for much longer. In certain areas, the situation is worsening to the point that given a choice, most local farmers would prefer to eliminate elephants from their environment. The relatively small elephant population, which are presently in Andhra Pradesh in India, having migrated from Karnataka and Tamil Nadu during 1983-84, has during the period 1987-1995, suffered 66% total mortality due to conflict (Rao 1995 in Menon et al. 1997). However, till now, most mitigation measures have been nothing more than tolerance enhancing measures. This limit varies from individual farmer to farmer depending on various factors including land availability, so as to absorb the shock of the damage, success of the growing season (i.e. drought versus good rainfall season) and so forth. In addition to the monetary loss incurred during raiding, farmers also invest in scaring devices such as firecrackers, thus investing a great deal of time and energy in guarding their fields - including during nights (Sukumar, 1994).
Elephant mortality caused by human-elephant conflict may be defined as that caused intentionally without a motive for ivory or meat (Menon et al. 1997). In this context, the recent surge of incidents along the Assam and Arunachal Pradesh border is serious cause for concern.

1.2 The Problem
Between July and November 2001, at least 17 elephants and at least five more during the same months in 2002 were found dead in the Sonitpur district of Assam, with the greatest concentration being in and around Nameri National Park. Majority of the cases are the result of a heightening man-elephant conflict situation. The common scenario of conflict resulting from regular crop depredation, destruction of property and in some cases, the loss of life, has taken a turn for the worse with the local villagers’ tolerance level plummeting at great speed. As a result, in this part of Assam, many elephants have been "eliminated as pests" illegally.

2. PROJECT AREA

Sonitpur district is situated between 26°30' and 27°02'N latitudes and between 92°17'E and 93°47'E longitudes and consists of 4,921.45 km² of land, accounting for 6.27% of the total geographical area of Assam (Assam Remote Sensing Application Centre, 1990). Reports of elephant poisoning were received from two regions, Nameri National Park and from villages around Tezpur town (Figure 1). The district is bordered by the state of Arunachal Pradesh in the north, Darrang district in the west, Lakhimpur district in the east and the river Brahmaputra and Nowgong district in the south. A sub-tropical humid to wet humid summer (March to October) and mild-cool winter (November to February) characterize the seasons of the district. The monsoon lasts from June to September with
rainfall averaging over 1500 mm (Assam Remote Sensing Application Centre, 1990).

Land use patterns in 1990, showed 56.54% of the district being utilized for agricultural purposes, with tea gardens (that are found mainly along the northern belt of the district) constituting 18.74% of the total agricultural land. Forestland at that time was 20.53% of the district (Assam Remote Sensing Application Centre, 1990).
3. METHODS

The Wildlife Trust of India has an active Elephant Conservation Project (ECP) in the region with a field camp based at Seijosa in Pakke Wildlife Sanctuary of Arunachal Pradesh. The site of the poisoning cases were all within a few hours of access from the ECP field camp and the two Field Officers at the camp prepared a preliminary investigative report based on first hand information from Forest Officials, actual site visits, verbal survey of the surrounding villages and other intelligence information. This report is meant to serve as baseline information for taking remedial action to safeguard the elephant population of the region, both in Assam and in the neighbouring Arunachal Pradesh.

4. DISCUSSION

4.1 Details of Mortality

During the depredation season of 2001, a total of 14 elephant poisoning cases were confirmed in Sonitpur District. (Table 2)

<table>
<thead>
<tr>
<th>SL No.</th>
<th>Date</th>
<th>Area</th>
<th>Sex</th>
<th>Tusker</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>30.05.01</td>
<td>Nameri NP</td>
<td>Adult Male</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>02.07.01</td>
<td>Nameri NP</td>
<td>Calf Male</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>16.07.01</td>
<td>Nameri NP</td>
<td>Sub-adult Male</td>
<td>Tusker</td>
</tr>
<tr>
<td>4</td>
<td>05.08.01</td>
<td>Nameri NP</td>
<td>Adult Female</td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>06.08.01</td>
<td>Nameri NP</td>
<td>Adult Female</td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>07.08.01</td>
<td>Nameri NP</td>
<td>Calf Female</td>
<td></td>
</tr>
<tr>
<td>7</td>
<td>07.08.01</td>
<td>Nameri NP</td>
<td>Sub-adult Male</td>
<td></td>
</tr>
<tr>
<td>8</td>
<td>13.08.01</td>
<td>Nameri NP</td>
<td>Sub-adult Female</td>
<td></td>
</tr>
<tr>
<td>9</td>
<td>15.08.01</td>
<td>Nameri NP</td>
<td>Adult Female</td>
<td></td>
</tr>
<tr>
<td>10</td>
<td>14.10.01</td>
<td>Tezpur (Haleswargaon)</td>
<td>Sub-adult Male</td>
<td>Tusker</td>
</tr>
<tr>
<td>11</td>
<td>14.10.01</td>
<td>Tezpur (Haleswargaon)</td>
<td>Sub-adult Female</td>
<td></td>
</tr>
<tr>
<td>12</td>
<td>14.10.01</td>
<td>Tezpur (Haleswargaon)</td>
<td>Sub-adult Female</td>
<td></td>
</tr>
<tr>
<td>13</td>
<td>25.10.01</td>
<td>Tezpur (Goromari)</td>
<td>Adult Male</td>
<td>Tusker</td>
</tr>
<tr>
<td>14</td>
<td>25.10.01</td>
<td>Tezpur (Goromari)</td>
<td>Calf Female</td>
<td></td>
</tr>
</tbody>
</table>

Table 2: Recorded poisoning cases of elephants in Assam (May-Nov) 2001
Figure 2: First sub-adult female found dead in the paddy fields of Holleswar in October 2001

Figure 3: The second sub-adult female found dead in the paddy fields of Holleswar in October 2001
Figure 4: Map of Nameri National Park showing sites of elephant deaths due to poisoning in 2001
4.2 Poisoning

The problem occurred in two distinct regions at specific times:

1. Nameri National Park and its surrounding reserve forests; particularly Chariduar, Balipara & Nauduar Reserve Forests between May and August 2001 (Figure 4)

4.2.1 Evidence of poisoning

On visiting the site of the deaths and investigating the carcasses found in and around Tezpur, poisoning was suspected to be the cause of death based on the following grounds:

On one of the carcasses, the following was written in a local Assamese language; "Paddy Thief (Bin) Laden" (Figure 5). The crude slogan comparing the elephant with a hated symbol of the times, Bin Laden, shows clear intolerance for elephants and apparent rejoicing at their death; a phenomenon that is uncommon in most parts of India.

Figure 5: Sub-adult tusker poisoned in a crop field of Holleswar village. The words "Paddy Thief (Bin) Laden" scrawled on its body in Assamese language.
On following the tracks used by the elephant in the paddy field and the site where it died in Tezpur area, the investigators noted that the paddy within 500m radius of the carcass was completely damaged. The damage pattern indicated that the elephants repeatedly walked through the paddy field, damaging crops. There was no sign of bullet injury on the body and a total of three dead elephants were found within 1.5 km² area on the same day. Despite there being no bullet wound, the fact that there was considerable crop damage and the slogan on the dead elephant seems to indicate that there was deliberate foul play in the deaths.

4.2.1.1 Toxicology reports
Professor Apurba Chakraborty from the Department of Pathology of the College of Veterinary Science, Khanapara Campus, Guwahati visited sites of two of the carcasses. However, in each case, the carcass was considerably decomposed, such that there was no possibility of conducting a post-mortem (Prof. Chakraborty, pers.comm.). The only option remaining was to take liver and intestinal samples for toxicological tests, which revealed death to be caused due to poisoning by an organophosphorous pesticide. Eight further samples for toxicological tests were sent to Professor Chakraborty by the Forest Department and all eight were confirmed cases of poisoning.

4.2.1.2 Other deaths
Other than the above confirmed cases, within the same time period, two elephants died in Adabari Tea Estate in Balipara but the cause of death was recorded as due to accidental falls. Two more elephants (one sub-adult tusker and one adult makhana) that died in Nameri National Park
had supposedly succumbed to liver fluke, and villagers reported at least four elephants to have died in Solanibari Reserve Forest behind Tezpur airfield. The latter area is an Air Force and Army base and while no confirmation of this claim has been received, these deaths are indeed probable. This is because this area is where elephants seek refuge while raiding crops in the villages around Tezpur, where five confirmed poisoning cases have been recorded. Circumstantial evidence supports the hypothesis that the elephants that were recorded as having died of disease could in fact have died of poisoning considering the time period during which the deaths occurred and the sites where the carcasses were found. Therefore, while the confirmed tally is 14, the final tally may be as high as 22 elephants poisoned to death between May and November 2001. Additionally, the majority of victims are calves, sub-adults and adult females (Table 2), which indicates that the target unit for poisoning were herds, as these tend to do the greatest damage to crop fields during the harvesting season. It can even be hypothesized that all 20 odd individuals belonged to one raiding herd.

Intelligence reports and the few post mortems conducted from the area indicate that all these elephant mortalities were linked and were caused by poison.

4.2.2 Method of poisoning
As these reports established that the elephants were poisoned, further attempts were made to determine the method used to poison the elephants. Questioning villagers in and around Holleswar and Goromari supported the hypothesis that the poison could have been mixed with country-made liquor. Brewing of local beer is common in all areas around Tezpur and it is widely known that elephants are attracted to this liquor. There are also historical reports of insecticides being placed in ripe
pumpkin, to which elephants are attracted, making this another possible method for poisoning.

Based on intelligence reports, it is suspected that hired hands may have been responsible for the poisonings in and around Nameri National Park. The method is not clear (Padmapati, pers. comm.). Till date, intelligence gathered by WTI has established that villagers of two particular ethnicities are known to utilize the paste of a specific tuber for poisoning. The paste is usually injected into pumpkins but may also be smeared at the tip of projectiles that are then shot from country-made muzzle-loaders for use in poaching. This tuber is currently being sold for Rs. 500/kg and the plant is found in high altitudes at Chang-tachong (>16000 ft) near Seppa in the East Kameng District of Arunachal Pradesh. At the time of the investigation, not enough of the paste could be collected to send for chemical analysis to determine if it had been used in the poisonings. However, organophosphorus pesticide was confirmed by the Guwahati Veterinary College.

4.2.3 Availability of poison
Preliminary investigations show that farmers have ready and easy access to the pesticide used. Most sellers of manure at Tezpur sell the organophosphorus-based pesticide, Demecron that was used to poison the animals. Information reached WTI, (through Nature's Bonyapran) claiming that immediately prior to the start of the poisonings episode near Tezpur, a large amount of Demecron entered the town. No further clue could be sought as to who was responsible for this and for what purpose. While this pesticide has been banned in response to these killings, it is still highly likely that it is still available in the black-market. Furthermore, most pesticides are toxic if used in the right quantities, and being an agricultural region, there is easy access to pesticides.
4.2.4 The offenders
It is possible that the culprits in both regions are local villagers or tea garden labourers. The reason for the poisonings is most likely to be elephants causing destruction to crops, property and life on a regular basis. Often, elephants take shelter in the tea gardens during the day when there are no forested areas near the paddy fields. Given the proximity, there is maximum likelihood of encounters and conflict. With regards to the Nameri poisonings, it is possible, as mentioned earlier, that the actual culprits are not encroachers but hired hands (Padmapati, pers comm.).

4.3 Reasons for Poisoning
4.3.1 Obvious reasons
Crop damage, property damage, disturbance and often loss of human life both of encroachers and villagers due to elephants have been identified as the obvious factors antagonizing humans towards elephants.

4.3.1.1 Crop and Property damage
Rice is the staple food of the people of Assam and six other northeastern states and therefore, all farmers predominantly cultivate rice. Other crops are cultivated seasonally, including sugarcane, wheat, mustard and seasame seed with fruits and vegetables being cultivated throughout they year (Assam Remote Sensing Application Centre, 1990).

Most locals live below the poverty line with rice cultivation being their sole income source. The majority of the farmers practice one time, rain-fed farming of this crop on their own land, largely for subsistence purposes, with some possible commercial sale. The farmers do not receive any state or central government subsidies for their cultivation. Thus, even slight damage to the crop is problematic for the farmers. Crop raiding by
elephants has been recorded from most parts of Assam, with a claimed increase in the quantity of crop damaged each year (Figures 6 and 7). A subsequent decrease in the tolerance levels of the farmers to crop raiding has consequently led to the killing of elephants.

The Holleswar villagers have formed a village committee of 10-12 people who keep guard at night during the peak depredation season. When elephants are spotted, the whole village is aroused and the animals chased away. Once the harvesting season is over, the elephants then attack the storage granaries. Accounts from villagers describe how, during the peak depredation period in 2001, elephants damaged 12-13 houses in one night. There are instances where houses have been damaged every year (Figure 8). One villager whose main source of income was a small cane crafts shop along the main road described how in 1999, approximately 28 elephants came into his compound and felled all his coconut trees. The villagers of Holleswar declared that they have filed numerous compensation claims, some of them over seven to eight years ago, but to no avail. In Goroimari, one man, ill-fatedly walked into the path of a rampaging elephant and was
consequently in hospital for several months afterwards. Although the villagers are all considerably poor, in this case, they raised money for his stay and treatment in the hospital as nothing was given by the government. Residents of Holleswar narrated a similar incident. While unlike Holleswargaon, there is no formalized watcher system in Goroimari, villagers keep guard for their fields whenever necessary and warn others on the approach of elephants. Only one man in this village has received a compensation of Rs. 3,000 in 2001 from the state government (not by Forest Department) for house destruction. Others have filed claims but none have been granted as yet. At the moment, government compensation policies are as such: Rs. 20,000/- for death, Rs. 3,000/- for permanent disability and not much for depredation. This compensation paid by the Chief Wildlife Warden is usually paid through the territorial division (Deka, pers. comm.). It should be noted that farmers living illegally in the Naduar and Chariduar Reserve Forests, are ineligible for compensation or relief from the state government.
4.3.1.2 Loss of human life

Annually, an average of 200 humans are killed by wild elephants. Assam is the second most affected state after West Bengal (Table 3). In most of the cases, these incidents do not receive full media coverage due to the late receipt of information. From personal accounts of villagers, the following human deaths were recorded around Holleswar and Goroimari villages: In 2001, a person was reported killed in the third week of October at Rangapara Police Station and another in Madhupur area near Bandardewa by wild elephants, another was killed in the second week of November near Duliajan, another lost his life near Ginjia under Biswanath, sub-division of Assam. In Holleswar in 2001, an old man was killed in the village when an elephant charged through the house and he was unfortunate enough to have been in the way. The year before that (2000), another aged civilian returning from shopping in town was passing through a small forest patch and was killed.
4.3.2 Elephant movement
As per communication from various forest department officials, there are three main elephant movement routes through the Sonitpur district of Assam, which are annually used, affecting settlement areas through which they pass:

1. From Chariduar Reserve Forest to Singri Reserve Forest to Orang National Park and finally to Burachapori Wildlife Sanctuary before finally returning along this route to Chariduar Reserve Forest.
2. From Naduar Reserve Forest (Nameri National Park) to Goroimari Reserve Forest (shelter area) to Solonibari Reserve Forest (forest patch behind Tezpur airfield) to Bhomoraguri Reserve Forest (shelter area) to Panpur Reserve Forest (food habitat) to Kusumtola 12APBN to Naduar/Biswanath Reserve Forest or back along Bhomoraguri RF to Naduar Reserve Forest.
3. From Behali Reserve Forest to Kathonibari Reserve Forest (shelter area) to the side of the river Brahmaputra and then back again to Behali RF.

Elephants have been using route number 2 (from Naduar to Solonibari Reserve Forest to Bhomaruguri RF to Panpur RF) as far back as the early 1970s (P Sarmah, pers. comm.) and thus annually affecting the villages around Tezpur, including Holleswar and Goroimari, for many years. Residents of both the latter villages claim that although they have been experiencing crop raiding and property damage by elephants since 1989, in the past two years, the situation has worsened. This is not only with respect to the frequency of raids during the pre- and post- paddy harvest season but also to the fact that raids are no longer restricted to these seasons, occurring throughout the year by a particular group of elephants that have taken to residing in Solonibari RF behind the Tezpur airfield.
### Table 3: Human mortalities caused by elephants till 31 December 2001 in India

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<td>3</td>
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<td></td>
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<td>67</td>
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<td>220</td>
<td>205</td>
<td>177</td>
<td>209</td>
<td>180</td>
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<td>156</td>
<td>193</td>
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Source: Project Elephant, 8th Meeting of the Steering Committee, April 2002
The Bhomaruguri and Solonibari Reserve Forests are claimed to primarily act as shelter areas for the elephants during the harvest seasons, providing them cover during the day. Reports say that the vegetation within Solonibari Reserve Forest is being thinned. This could possibly explain the increased frequency of raids in the neighbouring villages during the harvest season. There are further reports that the grassland in Panpur RF, which is situated on the northern bank of the Brahmaputra, which is a primary food source along this route for the elephants, is being degraded, again affecting the elephants. However, it is apparent that more concrete research needs to be conducted on these routes, determining the number of elephants moving along this route annually, and analyzing habitat in these Reserve Forests. Although the land of affected villages along this route near Tezpur is private land, cognizance must be made of the fact that this may be an established elephant corridor, and therefore all Revenue Department policies and sanctions for construction must be well thought out. Since villagers have been experiencing the problem of crop depredation regularly each year, it is debatable whether any house construction and village establishment should ever have been allowed in the area. However, this is not an atypical scenario where development policies rarely acknowledge wildlife movement and feeding behaviour. Even if they do, once that land officially becomes private land, all wildlife related issues are then considered to be the responsibility of the Forest Department. In this situation, the depletion of forest resources in surrounding Reserve Forests, such as Balipara and Solonibari, only serves to add more pressure on the elephant population intensifying the conflict with humans.

These elephants are part of the North Bank (of the Brahmaputra river) population which covers part of north Bengal, Assam, Arunachal Pradesh and Bhutan (Choudhury, 1999).
4.3.3 Encroachment as a cause
Most areas of the Reserve Forests, wildlife sanctuaries and even the National Parks of the northern belt of Assam are highly disturbed. As per a survey conducted by the Forest Department in 1999, more than 40.95% of the total Protected Area is encroached. So, it is hardly surprising that elephants in search of food and water come into direct conflict with the encroachers. Members of the Forest Department themselves have claimed that the encroachment has escalated immensely in the past five to eight years (Deka, pers. comm; P Sarmah, pers. comm.).

The resources of the Balipara and Nauduar Reserve Forests are fast succumbing to anthropogenic pressure. In Balipara, only dwindling sal patches of forest remain, everything else being cleared by the Bodo encroachers (P. Sarmah, pers. comm.) (Figures 9 and 10). Already,
Nameri National Park has lost its buffer zone of Reserve Forest, with encroachers having settled immediately outside the gates of the Park. Sources at the ground level claim that encroachers have the support of enforcement agencies, who are facilitating their movement into the forests (Talukdar, pers comm.).

Table 4: Area encroached in different Reserve Forests

<table>
<thead>
<tr>
<th>S No.</th>
<th>Reserve Forest</th>
<th>Area (km²)</th>
<th>Area Encroached %</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Chariduar</td>
<td>240.72</td>
<td>58.16</td>
</tr>
<tr>
<td>2</td>
<td>Balipara</td>
<td>189.72</td>
<td>31.6</td>
</tr>
<tr>
<td>3</td>
<td>Behali</td>
<td>140.16</td>
<td>42.84</td>
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<tr>
<td>4</td>
<td>Biswanath</td>
<td>105.61</td>
<td>95.60</td>
</tr>
<tr>
<td>5</td>
<td>Naduar</td>
<td>144.32</td>
<td>43.19</td>
</tr>
<tr>
<td>6</td>
<td>Balipara</td>
<td>189.72</td>
<td>70.10</td>
</tr>
<tr>
<td>7</td>
<td>Chariduar</td>
<td>86.00</td>
<td>55.09</td>
</tr>
<tr>
<td>8</td>
<td>Rowta</td>
<td>97.42</td>
<td>3.00</td>
</tr>
</tbody>
</table>

(1&2: Ahmed & Baruah, pers comm.) (3-8: Forest Department report, 1999)
5. RESPONSE TO THE DEATHS

5.1 Forest Department

5.1.1 Disposal of carcasses

Though the State Forest Department is the sole authority responsible for the elephant, their response has been late with regards to the burying of carcasses of the animals that died on 14th October in Holeswargaon. All the carcasses were totally decomposed and putrified by the time the Forest Department reacted. Besides the obvious lack of conservation concern villagers were also annoyed to this response. However the two elephants that died on 25th October in the Goroimari area near Tezpur were buried the next day. In the case of the deaths of two calves in Adabari tea estate near Balipara, the information was received late and therefore, the carcasses were buried late.

5.1.2 Eviction

In Nauduar Reserve Forest, where the majority of the people are agriculturists, with a profile consisting of the Bodo people (80%), Adivasi people (10%), and Nepalis (10%) the origin of encroachment has been from the Kokrajhar and Udalguri regions of Assam. About 80% of the people are Hindus, 10% are Christians and the remaining 10% belong to other religions. They farm mainly paddy, mustard, chillies and vegetables and they perceive wildlife in a negative, hostile manner. The government tried to evict the encroachers thrice in 2000 and during one of these attempts, three villagers died. A case has been filed in high court against the Forest Department and State Government for the merciless killing of villagers.

In Chariduar RF, as a consequence of the large-scale killing of elephants, in a joint operation by forest personnel and the police, 246 illegally constructed huts were demolished and approximately $5\,\text{km}^2$ (500
hectares) of encroached forestland was recovered at Sonai-Rupai Game Sanctuary in the Sonitpur district of Assam. In April 2002, two main settlements of 250 houses in about 13 km² were evicted from Nameri National Park (Sarmah, pers comm.). One of the two settlements - Rangajan - was a fairly old one, the residents of which were in the past offered them island of Chabhri on the Brahmaputra River as a relocation site. However, years of attempts were proving futile, leaving officials with only one solution - eviction (Sarmah, pers comm.). Rangajan was a part of the Reserve Forest before 1999 but the village remained on when the reserve forest was added to Nameri National Park. The second settlement (Bordikarai) was a new encroachment in Nameri National Park that took place after 1999. Although the armed forces and political will were supportive of this eviction, repercussions were felt almost immediately. A local MLA led a mob that burned forest department huts and buildings and engaged in arson and loot as a protest to the eviction.

5.1.3 Relationship between the Wildlife and Territorial Forest Divisions
In Assam, several important forest areas and a large chunk of the wild elephant habitat fall under the administrative control of territorial forest divisions. Consequently, when there are any wildlife related problems under the jurisdiction of the territorial division, technically this becomes an issue between the two divisions. Depredation is seen by the territorial division as a problem to be handled by the wildlife division. The former lack both the expertise and the resources to deal with such problems and often need to request the wildlife division to provide the arms, koonkis if necessary and extra manpower to handle the problem (P. Sarmah, pers. comm.). Thus, a lack of coordination between these divisions, results in delayed actions being taken. Each division’s jurisdiction must be clearly demarcated by the government, providing the necessary manpower, expertise and resources.
5.1.4 Mitigation Measures
Meetings had been convened by the territorial forest Division in Nameri National Park and in the villages around Tezpur to increase the awareness of villagers to the situation and to request the residents not to kill any more elephants (Deka, pers. comm.). Since no other elephants died in the remaining part of the season, these meetings have been considered a success. However, five elephants were killed the following season in 2002, and therefore, the success was short lived.

5.2 District Administration
5.2.1 Enquiry
Following pressure from local NGOs (Nature's Banyapran) and WTI, the Deputy Commissioner of the Sonitpur district ordered an enquiry into the killings of elephants in and around Tezpur. Mr. Ajitendra Sarmah, ACS, the Addl. Deputy Commissioner, Sonitpur initiated this enquiry. During the enquiry, he questioned several villagers and the Gaonburah (village headman) on the identity of the offenders, but was unsuccessful (A. Sarmah pers. comm.). He also attended several village meetings and requested to stop such activities. Although he sympathized with the villagers on the loss of livelihood he firmly instructed the police to take necessary steps to prevent such action in future.

5.2.2 Ban on selling Demecron
The District Magistrate, Mr. Sanjoy Lohia, in exercise of powers under Section 144 CrPC (Appendix I), banned the sale of the pesticide "Demecron" in Sonitpur district.

5.3 Police
Information about most of the deaths reached the forest officials through the local police station. The police also participated in the eviction process in Sonai-Rupai Sanctuary and Nameri National Park. There is a
need for the police to begin dialogue with the Sub-divisional Officer (Civil) in the presence of all DFOs and the SI for an effective conservation strategy for elephants in the Biswanath and Tezpur sub-divisions of Assam.

5.4 Action taken by NGOs

5.4.1 Aaranyak
A Guwahati based NGO, Aaranyak expressed great concern over the killings. They demanded a white paper on such killings from the State Forest Department, Assam. They are also producing a publication/pamphlet on elephant conservation to be distributed in the affected villages (Talukdar, pers comm.).

5.4.2 Nature's Bonyapran
A Bedeti based local NGO, Nature's Bonyapran, with the help of WTI personnel, pressurized the district administration and forest officials to take immediate action against killing elephants and ban the sale of Demecron in and around the Tezpur areas. They also coordinated a conservation workshop in the region in early 2002, bringing together managers of wildlife areas, conservationists and other concerned leaders to address the issue of encroachment and conservation of elephant habitat in the state.

5.4.3 The Wildlife Trust of India
Wildlife Trust of India's field camp in Pakke Wildlife Sanctuary enables WTI's Field Officers to respond to such crisis situations quite rapidly. On receiving information about the mortalities over the past few months, the Field Officers accompanied Forest Department staff to each site where elephants were found dead. Subsequently, most mortalities recorded above in Table 2, have been verified through site checks. Additionally,
WTI Field Officers are utilizing their own intelligence network to gain any insights into the poisonings, including the use of a tuber paste for the purpose. The activities of certain elephant poachers within the Park and ivory traders in the villages are also being monitored. WTI is now trying to verify this information from other sources before suggesting action. Such investigations need to be conducted in the Chariduar region of Assam as well.

5.5 Media response
The elephant deaths on 14th October 2001 were reported to have occurred in Holeswargaon, Borjhargaon, Ghogora, Udmari, and Teleria in Tezpur. However, the actual number of deaths remained controversial and varied in different newspapers. Even the most popular English daily reported a death of eight tuskers. Again on 25th October 2001 night, two elephants were reported dead from the Regonijar area. Finally, the various local daily newspapers reported that more than 30 elephants died within a few months, in and around Tezpur.

While deaths have been verified at the Holeswargaon, Teleria and Rengonijar areas in Tezpur, no death has so far been officially recorded from the Borjhargaon, Ghogora and Udmari areas. Only three elephants were found in the crop fields of Holeswargaon as opposed to the seven reported in the newspapers. There is a possibility that four more died in the Teleria area, inside the defense colony and airport areas but this is yet to be confirmed. On the night of 25th October 2001, another two elephants died in Rengonijar area, which is 3.5 kms further north of Goroiimari.

The confusion over the actual number of elephants killed may be due to the fact that nobody physically visited the locations where carcasses
were present. In most of the cases, the information was collected from secondary sources, such as the villagers. When the investigators of this report visited the area, the crop field where the deaths took place was found to be approximately 4-5 km². Holeswargaon, Ghogara, and Udmari surround the area. Though only three deaths were verified, the number reported in papers was three times this because the information source of the reporters were not reliable.

5.6 The Public
The villagers of Holleswar, on being interviewed, complained that due attention was not paid to the situation until the death of the elephants. Then, all of a sudden there were people visiting from as far away as Delhi and Guwahati. It is their claim that usually, the response to depredation is from the territorial forest officials, but on the occasion of the elephant deaths, a wildlife DFO did visit the spot but never returned. All the villagers of the greater Holeswar area under Tezpur undertook dharna in front of the DC and DFO on 5th November, 2001 demanding immediate action by the authorities to solve the problem of crop raiding. More than 100 farmers took part in this demonstration.

AASU (All Assam Student Union), the largest student organization also undertook dharna in front of the DC and DFO on 4th November, 2001 demanding immediate action to prevent further problem from elephants.

6. RECOMMENDATIONS
6.1 What is the solution?
At least 14 elephants were poisoned in 2001 and five in 2002. While at first glance this seems to be a response brought on by the exasperation of local villagers, suffering from crop depredation, property damage and loss of human life, year after year, the actual situation is much more
complex and grave. Mitigation action must be focused around cropping seasons to prevent any further elephants from being killed, this must be followed by a more long-term, multi-pronged approach. Ultimately, the root cause of this problem must be addressed and resolved. Otherwise any action taken will only be a measure that prolongs but not prevents. It must be clearly understood that conflict cannot be eliminated in any area where humans and elephants are to co-exist. The problem can only be reduced or minimised. In this situation, no single management option will provide the desired results, and each management strategy need to be an adaptive, multi-pronged, site specific approach that is supported by appropriate research (Hoare, 1995).

A critical review must first be done to determine the deficiencies of the current Protected Area system. Why are the Reserve Forests being depleted of their natural resources? Our conservation philosophies are currently based on a mosaic of Reserve Forests, Wildlife Sanctuaries and National Parks. Unfortunately, the situation in Assam today is such that the buffers to the core conservation areas are being systematically shaved of their cover and cleaned of their wildlife. Are the boundaries to these core areas, such as Nameri National Park, strong enough to withstand the escalating pressure from encroachers? A staff of 38 individuals is hardly capable of securing 200 km$^2$ of land (Sarmah, pers comm.), especially when it does not have the backing of its governing agencies in the form of supporting policies, manpower and resources. Nameri National Park has now become the buffer zone to the adjoining Pakke Wildlife Sanctuary of the Arunchal Pradesh. A lack of conviction on the part of the government has already lead to the loss of Nameri's buffer zone, how much longer before the buffer zone to Pakke Wildlife Sanctuary is lost?

Formulation of policies, however, is not an issue, it is the implementation of the policies that becomes a limiting factor. Given the current population...
growth of this country, the current socio-economic situation of the rural areas, and the demands of the people, the increasing pressure on the natural resource base must be addressed. Although the subject of joint management and sustainable utilization of resources is a highly contested one in both the national and international arenas, this is still an option that may be considered for buffer zones. There is only one option for conservation of core areas; complete protection with no compromise on this policy.

The core areas must be managed for the optimum conditions in which the biodiversity may thrive within the area. Different conservation zones need to be clearly demarcated and each of these should be managed with a set of specially tailored strategies. The operative word being "managed." Active management by the Forest Department is with adequate manpower and resources and policy formulation to support their goal.

It is in this regard too that the clear demarcation of jurisdiction be made between the wildlife and territorial divisions and they be adequately equipped to execute their duties. It is the personal opinion of a senior officer of the district administration that a separate DC be appointed under the direct supervision of the MoEF who will devote to all such matters, ie a Forest DC, regionally for each district, throughout the country.

This will mean that while this DC will function with the assistance of the Forest Department, he will focus only on these problems and be able to pay them their due attention. While all this is repetition of ideas thoroughly discussed, the situation in Assam is only a reminder of our failure to make these ideas a reality, and therefore, these ideas must continue to be discussed until they are realised.
The issue of encroachment is a very real one that is by no means going to disappear on its own (Fig 11). If conservation truly is a priority for the government, and an understanding genuinely exists on the necessity of conserving the nation's biodiversity and natural resource base, then a very grand political will is required to handle encroachment in Assam. This issue is not merely of a few elephants being poisoned to death, which in itself, looking at our history, mythology and culture is disheartening enough, but it is an issue symptomatic of the degrading health of our ecosystems, that will have repercussions far into the future.

6.2 Options
It must be noted however, that to be able to choose among the various options available, the general base of information needs to be greatly broadened. This includes an up-to-date analysis of the encroached forest area, present forest compositions, other land-use and availability of drinking sources for wildlife both along the movement route of these
elephants around Tezpur and in the Naduar and Chariduar Reserve Forests. If eviction of encroachers is to occur in Naduar and Chariduar, some form of habitat improvement, also needs to be considered. The movement of animals from one habitat patch to the other needs to be tracked and recorded. Although some corridors are known, elephant movement along these needs to be tracked again such that they can be prioritized and then, if necessary, secured or acquired and improved. Knowledge of the feeding behaviour of the species in these forests would greatly assist in the improvement of habitat quality if required. Until the movement route is properly established from Naduar to Panpur, (and the two other routes described) and solutions are found for the problem, perhaps it would be advisable to prevent further development of buildings thus avoiding unnecessary damage along the route each year.

Through the interviews conducted during the investigation, various stakeholders including the villagers, district administration, a local NGO and Forest Department suggested a number of solutions for conflict mitigation.

A common perception among the villagers in the affected towns and others, including ADC, Tezpur, Mr. Sarmah, is that one reason for the high levels of crop depredation in the past few years is the illegal felling of trees by local people in Arunachal Pradesh. This is causing habitat loss by pushing the elephants further into Assam. While this is not entirely correct, habitat loss and degradation escalate problem in the region. However, much of this is occurring in Assam rather than across the border. Again, strict action by enforcement agencies and implementation of already existing laws to protect the forests, is imperative.
An immediate concern is the relatively small population of elephants residing year round in the forest behind the Tezpur airfield. Although no accurate population estimates could be made, it is about 40-60. This population will become increasingly problematic, as they are isolated in a small patch of forest surrounded by human habitation. Options for their removal could be: driving the population to the nearest Protected Area, capture and translocation to a much farther Protected Area, or finally, capturing all or part of the population for domestication and sale. However, each option has its shortcomings. In either of the first two options, Protected Areas must first be identified where these elephants can be either driven or translocated. Numerous ecological considerations must be made in this regard, which can only be done based on further study and is therefore out of the scope of this report. However, both options, the second more than the first, will require sizeable monetary commitments. Drawing from experiences worldwide, the most recent being the translocation of herds of elephants to Mozambique from the Kruger National Park in South Africa, either of these first two options must be considered only after recognizing the behavioural ecology of the species, and its tendency to traverse great distances, back to its original home range. There had also been the experience in Kattepura area of Karnataka where elephants returned to the place of capture covering about 150 Km after the release.

Resuming the capture and domestication policy was suggested by members of the Forest Department and district administration, as a means of mitigating conflict, with respect to all marauding elephants. Mr. Deka, ACF, Tezpur suggested splitting the region into zones, a certain number of elephants capturing in each zone through tenders being granted out, to subsequently train and sell the elephants. However, capture is wrought with complications and problems including...
identification of the problem individuals, effect on the herd while removing individuals from it and the effect on the removed individual (Menon et al., 2003). Techniques should not be such that only the old, sick or very young individuals are caught. It must be noted that with no timber operations, these elephants, if left to the Forest Department, will become an extra burden with their high maintenance costs. Furthermore, capture has been shown not to solve conflict (Menon et al., 2003). However, depending on the situation, rogue elephants may need to be eliminated.

Alternate livelihoods, government support schemes and eco-development programmes are further options that may be deliberated concerning the affected villagers. As has been discussed in the report, most farmers are one time paddy farmers depending on their harvest for all subsistence purposes. While a considerable proportion of the new generation is being educated and would rather be employed in a job, most people currently do not have any choice other than cultivation. Changes in crop pattern and introduction of cash crops, which are not palatable to elephants, can only be considered after careful examination of the current socio-economic situation, practical feasibility, taking cognizance of the local soil and climatic conditions and marketing strategy for the crop. While alternative sources of income is a tempting one, this must be done cautiously. One interviewee, Ratul Saikiya from Holleswar, who owns a small crafts and cane shop along the main road described the difficulty in earning a living through this means as there is a very poor local market for his products. While eco-development in encroached areas is not a possibility, government supported schemes for alternate livelihoods should be in place for villagers such as Ratul Saikiya. Government incentives providing subsidies for not cutting grass and trees and for piggery, poultry etc. should be seriously contemplated. However, any change in people's lifestyle must be very clearly thought
out before advocacy. Conversion from traditional lifestyle and practices can have unforeseen repercussions on the community in question and may not be good for the social development of the community. There are social organizations which can focus on the basic human values required to build a responsible community, a component of which would include respect for and co-existence with nature. These organizations may be targeted to apply a multi-pronged approach to the problem. No mitigation measure can work without the support of the local community. Investigations in the villages showed that the villagers themselves admitted that power fences erected by the Forest Department were cut up and the segments sold in the market by members of the community. Thus, an approach is required that works, encouraging basic human values first and conservation forming a part of this.

Compensation schemes need also to be re-valuated. Payment of compensation for damage caused by wild animals is commonly considered for increasing the tolerance threshold of the affected people. The essential ingredients of a successful compensation scheme include quick and accurate verification of damage, timely and adequate payment, clear and exact guidelines to the scheme, a measure of success, sufficient funds and specific tailoring to different sites (Nyhus et al., 2003). Generally, however, there is often considerable delay between the filing of a compensation claim and settlement. This is due to the shortage of manpower and logistics that make the verification of claims by site visits to assess the damage a very time consuming process. This verification is essential, as the filing of false claims is a valid problem. As a consequence, while this tolerance may be high initially, the delay in verifying and paying compensation, and the costs borne by the people, may it be crop or property damage or even injury and death, are reducing tolerance levels (Williams and Johnsingh, 1996; Nyhus et al., 2003).
Additional hindrances include determining the adequate amount of compensation to be paid. Often, villagers are resentful as they feel they have been under-compensated compared to their trauma and the time and energy invested in guarding fields. A scheme that does not live up to the expectations of the villagers often confers worse resentment than no scheme at all (Nyhus et al., 2003). Certain successful schemes require villagers to comply with certain rules before they are eligible for compensation (Nyhus et al., 2003). Compensation schemes that rely on paying in kind rather than cash may also be considered. Furthermore, such schemes must be such that the victims are also required to participate in the process, thus giving rise to some respect for the scheme, rather than taking it for granted. The latter can be used as a component of an overall mitigation scheme and not the sole mitigation measure to conflict.

That aside, immediate remedial measures need to be implemented targeting approaching depredation seasons. An action plan involving all the stakeholders is proposed.

6.3 Action Plan

6.3.1 Watcher squads

As an immediate short-term measure to reduce the extent of conflict, particularly around Tezpur, villagers, district administration and local NGO alike suggested the formation of watcher squads in conjunction with the Forest Department. While a village committee has already been created in Holleswar that acts as a watcher squad during peak depredation, this is not very effective and the residents wish to see a pro-active stance taken by the Forest Department. Officials of the Forest Department (Deka, pers. comm.) have stated that they do not have the resources to create scaring squads as this will require funds for wages, guns, torches
and other equipment and if necessary, captive elephants. The latter are usually rented at the rate of Rs. 7,000/- per day and a minimum of three captive elephants would be required. All these expenses combined, for a period of three months, including transport, food and lodging costs for the watchers is more than the Forest Department can afford on an annual basis. WTI has been involved in a fairly cost-effective volunteer run watcher scheme in Seijosa in Pakhui Wildlife Sanctuary for the past two years. In collaboration with the Forest Department, local villagers and a local NGO, this watcher scheme is based on a certain number of watchers being appointed on a rotation basis and being paid a nominal amount by WTI, with twice the number of volunteers being appointed by the village committee. These squads have been proved useful in not only nurturing a relationship between the various parties, but all residents claimed lack of depredation in 2001. However, the situation around Tezpur may be more grave since the marauding elephants are en-route to a small forest patch behind the airport which acts primarily as a shelter base rather than a food base, and crop raiding is a prime activity for these elephants. This is particularly why Forest Department partnership in this scheme is vital, as they should be able to bring with them additional resources and expertise. The villagers are willing to volunteer in this, even without pay if necessary, as long as they see some pro-active steps being taken.

**Action: WTI to facilitate, local NGO, villagers and Forest Department**

6.3.2 Enforcement

(1) Although WTI's Field Officers in Assam and Arunachal Pradesh are utilizing their own intelligence network in the region to determine the identity of the offenders, both the police and Forest Department must continue to investigate the offences and remain alert during the coming season. Although the problem of human-elephant conflict is always a
tricky one as it involves a certain degree of sympathy for the villagers, it must be noted that if enforcement agencies do not take any visible stringent action against offenders, a precedent which promotes the killing of wildlife is set. This would be ironical as the Asian elephant is offered the highest level of protection under Schedule I of the Wildlife (Protection) Act of 1972. Following on from this, once the offenders have been identified, legal action must be taken up against these individuals on a number of accounts, be it for purchase of banned pesticide or for deliberate intent to poison the animals.

**Action: Assam enforcement agencies and Project Elephant supported by WTI**

(2) Although a local temporary ban is in place on the sale of Demecron in the Sonitpur area, this action needs to be followed up by enforcement agencies to ensure that people do not have access to this pesticide. More policies need to be developed to avoid the use of pesticides for such purposes.

**Action: Local administrative and enforcement authorities (DC and DFOs office)**

6.3.3 Conflict Resolution

(1) One fact that kept being reiterated throughout interviews with villagers around Tezpur, was a feeling of alienation from the Forest Department. There was blatant hostility towards the Forest Department because of what they felt a complete lack of interest and nonchalant attitude towards their plight. Some expressed their amazement at the lack of visible action by the Forest Department and other governmental agencies in response to the illegal felling and clearing of forests which they consider the root cause of the problem, but on the other hand, the willingness to prosecute
a few villagers who had resorted to albeit rather extreme but understandable means to defend themselves, their families, and their source of livelihood. The elephant is largely still viewed and revered as “Ganesh Babu” (reference to the elephant headed God, Lord Ganesha). Though villagers did not accept responsibility for the poisonings, they do admit that beyond a certain limit, driven by frustration and faced by indifference from the Forest Department, they are desperate for a solution. They assured the investigators that they were still willing to actively participate and assist the Forest Department in solving this problem. The relationship between the two had deteriorated to such an extent that in one instance, frustrated and exasperated villagers beat up Forest Department personnels when they visited the area.

Thus, a network of NGOs, village committees and governmental agencies needs to be created and fortified with interactive exchange of information and monitoring of the situation. This obviously requires an atmosphere of cooperation and communication between the parties. More often than not, in situations such as these, blame is shuttled from one agency to the other rather than taking any action. It needs to be realized, that often where one agency lacks in a particular resource, (manpower, local rapport, or technical expertise) other agencies can fill in.

**Action: Local NGOs and Forest Department, facilitated by WTI**

(2) The encroachment factor in this situation needs to be resolved as a priority. In the Naduar and Chariduar areas, encroachment has been of Reserve Forests and as a result, the buffer zone of the Nameri National Park has been cleared. While eviction and resettlement would be the ideal solutions to the problem in order to preserve the forests (Deka, pers. comm.; P. Sarmah, pers. comm.), it is probably less likely/feasible since the encroachers have been settled there for so long. Even if eviction was
to be implemented by the government, measures must be in place to prevent re-encroachment of the area. This encroachment has not been legalized; so one option is legalizing these villages as forest villages and possibly implementing eco-development programmes for them. One serious apprehension however, is that even if the government was to allocate fixed areas of land to each family, there is no guarantee that in time, these villages can be prevented from expanding their boundaries and further destroying wildlife habitat.

**Action: Assam government, WTI can assist in litigation**

### 6.3.4 Technical Support

There are various aspects in which WTI may offer technical support in mitigating this crisis:

1. An easy-to-use manual is being produced, under the auspices of WTI, which will act as a guide to all field personnel as well as veterinarians as to the poisons most commonly used on elephants in India. This handbook will not only give detailed descriptions of the different poisons, but also on the immediate follow up action to be taken when an animal is observed to be suffering or has died due to poisoning. It will also include suggestions on how to prevent such incidents in future. It is recommended that Project Elephant consider distributing this manual officially but strictly to avoid misuse of the guide.

**Action: WTI-Project Elephant**

2. Two workshops were conducted by WTI in collaboration with the Central Zoo Authority in February 2002 in Assam and Arunachal Pradesh, which aimed primarily at wildlife rehabilitators and veterinarians from the region. One workshop addressed chemical restraint and wildlife disease investigation procedures while the second was on wildlife rehabilitation.
These workshops allowed a forum where topics such as poisoning could be addressed amongst the region's rehabilitators and veterinarians.

(3) WTI has established a field camp at Pakke Wildlife Sanctuary in Arunachal Pradesh. The Field Officers based here have initiated a long-term monitoring project of the resident elephant population. The emphasis is on habitat assessment, population estimation, population structures and human-elephant conflict. The field camp will act as an additional center of knowledge and support for similar projects that may be taken up in Tezpur, Naduar and Chariduar.
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Appendix 1

Section 144 of the Code of Criminal Procedure reads as follows:

(1) In cases where, in the opinion of a District Magistrate, a sub-divisional Magistrate or any other Executive Magistrate specially empowered by the State Government in this behalf, there is sufficient ground for proceeding under this section and immediate prevention or speedy remedy is desirable, such Magistrate may, by a written order stating the material facts of the case and served in the manner provided by section 134, direct any person to abstain from a certain act or to take certain order with respect to certain property in his possession or under his management, if such Magistrate considers that such direction is likely to prevent, or tends to prevent obstruction, annoyance or injury to any person lawfully employed, or danger to human life, health or safety, or a disturbance of the public tranquility, or a riot, or an affray.

(2) An order under this section may, in cases of emergency or in cases where the circumstances do not admit of the serving in due time of a notice upon the person against whom the order is directed, be passed ex parte

(3) An order under this section may be directed to a particular individual, or to persons residing in a particular place or area, or to the public generally when frequenting or visiting a particular place or area

(4) No order under this section shall remain in force for more than two months from the making thereof:
Provided that, if the State Government considers it necessary so to do for preventing a riot or any affray, it may, by notification, direct that an order made by a Magistrate under this section shall remain in force for such further period not exceeding six months from the date on which the order made by the Magistrate would have, but for such order, expired, as it may specify in the said notification.

(5) Any magistrate may, either on his own motion or on the application of any person aggrieved, rescind or alter any order made under this section, by himself or any Magistrate subordinate to him or by his predecessor-in-office.

(6) The State Government may, either on its own motion or on the application of any person aggrieved, rescind or alter any order made by it under the proviso to sub-section (4).

(7) Where an application under sub-section (5) or sub-section (6) is received, the Magistrate, or the State Government, as the case may be, shall afford to the applicant an early opportunity of appearing before him or it, either in person or by Government, as the case may be, rejects the application wholly or in part, he or it shall record in writing the reasons for so doing.
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Emergency Relief Network Digest 2005 – 2006
Wildlife Trust of India (WTI), is a non-profit conservation organisation, committed to help conserve nature, especially endangered species and threatened habitats, in partnership with communities and governments. Its principal concerns are crisis management and the provision of quick, efficient aid to those areas that require it the most. In the longer term it hopes to achieve, through proactive reforms, an atmosphere conducive to conserving India’s wildlife and its habitat.

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Nidhi Gureja: Fig. 7, Fig. 9
It took the deaths of 22 elephants by poisoning in 2001 and 2002 to draw attention to the prevailing human-elephant conflict in the north eastern state of Assam. The conflict had reached such proportions around Nameri National Park that the elephant, that was once revered as Ganesha by the villagers, had now turned tormentor that deserved to be eliminated. An investigation that was carried out in the region looked into reasons for the declining tolerance of the villagers and recommended immediate measures, as well as, a long-term strategy to tackle this problem.

Nidhi Gureja, Vivek Menon, Prabal Sarkar and Sunil Subba Kyarong

Human-Elephant Conflict in Sonitpur District of Assam

Wildlife Trust of India
A-220, New Friends Colony, New Delhi-110025
Tel: +91 11 26326025, 26326026, Fax: +91 11 26326027
Email: info@wti.org.in, Website: www.wti.org.in