

COMMUNITY EDUCATION AND OUTREACH PROGRAM
FOR
HUMAN-WILD ANIMAL CO-EXISTENCE IN NEPAL
A CASE STUDY OF
CHITWAN NATIONAL PARK

2011



GANGA NAKARMI

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Author

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RELIEF FUND FOR WILDLIFE VICTIMS



Support



2011

Dedication

To my beloved Parents

and

To all who passed their lives on wildlife-induced incidents

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ABBREVIATION

APR	Annual Progress Report
BCC	Biodiversity Conservation Center
BZ	Buffer Zone
BZDC	Buffer Zone Development Council
BZUC	Buffer Zone User Committee
CBD	Convention on Biological Diversity
CNP	Chitwan National Park
DNPWC	Department of National Parks and Wildlife Conservation
HWC	Human Wildlife Conflict
INGO	International Non Government Organization
IUCN	International Union for Conservation of Nature and Natural Resources
MA	Millennium Ecosystem Assessment
MoFSC	Ministry of Forest and Soil Conservation
NGO	Non Government Organization
PPP	Park People Program
TAL	Terai Arc Landscape Project
TNC	The Nature Conservation
UG	User Group
VDC	Village Development Committee
WPC	World Park Congress
WCU	World Conservation Union
WWF	World Wildlife Fund

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Executive summary

It has been already realized that human beings and their activities greatly impact effectiveness of conservation of wild animals and protected area management. Many researches show that efforts to continue biodiversity conservation must address human context in terms of conservation benefits and conservation effects to human beings, especially, local communities (Dunkel 2011, Smith et. al 2010, Gorenflo 2006, Naess 1979, Dickman 2011). People can be obstacle as well as conservation partners depending on to what extent they have been affected or benefitted by conservation of surrounding wild animals (Nakarmi 2010).

Since last two decades human activities and their effects on wildlife are increasing rigorously resulting in loss of wildlife species (Dickman et. al. 2011, Devall 2006, Ogada et. al 2003). And, the challenges of conserving biodiversity seems to persists in upcoming decades as human population is expected to increase from 6.5 billion in early 2006 to about 9.1 billion by 2050 (United Nations 2005, US Bureau of the Census 2006, In: Gorenflo et. al. 2006). Thus, this situation is very critical. This is applicable to Chitwan National Park of Nepal as well. Chitwan National Park and the surrounding buffer zone is home to many wildlife species including globally significant rare and endangered wild animals such as tigers, rhinoceros, elephants, etc.

Local people in the Buffer zone of CNP often complain about crop damage, livestock depredation and human death and injury by the surrounding wild animals. For instance, there were 424 human casualties (death and injury) in and around the Park in ten year period between 1997 and 2007 (Nakarmi, 2010). Recently, in a seven month -period between August 2009 and February 2010, more than ten human casualties occurred in CNP and the Buffer zone. In response, people killed wild animals in retaliation and/or compel the Park management authority to displace the so called ‘problem’ animals from their original habitat. For example, in 2004, six problem tigers were captured in CNP; 5 were killed and one was kept in captivity (Gurung, 2008). This situation seems to persist in the long run due to the increased regenerated forest and cultivated lands in the Buffer zone and the increased wild animals as well as human population in the area. Consequently, retaliatory and obligatory killing of wild animals, combined with poaching for their highly valued body parts, make rare and ‘endangered’ wild animals such as tigers and rhinoceros etc. prone to extinction.

The Park management authority and the other conservation organizations have been undertaking various measures to mitigate conflict between local people and wild animals. Setting solar, electric and bio fences; Machan building; toilet and biogas installation; cash as immediate relief in case of human casualty and livestock/cattle depredation; etc. are to name some. Besides, these organizations have been carrying out conservation education and activities as one of the key agendas with an aim to increase people’s knowledge, appreciation, motivation and skills towards wildlife conservation in order to achieve solutions for both conservation of wild animals/nature and sustainable community development.

Despite all these efforts, there still exists conflict between local people and the Park management authority. In fact, it is challenging and cannot be achieved in overnight, especially, in a developing country like Nepal where poverty; increasing human population and the resulting resource demands; and conservation needs are confronting with one another due to limited fundamental resources.

Based on the first project (Ensuring Human-Wildlife Conflict in Nepal, a case study of Wildlife induced Human Casualty in CNP, 2009), a qualitative and constant spread of knowledge about

tigers, rhinoceros, elephants, bears and other animals, as well as possibilities of alternative livelihood opportunities were identified as the most proactive measures in order to maintain harmony between wild animals and the local community in CNP. So, firstly, an assessment of the existing conservation education and activities in the project area was carried out. Secondly, some conservation education outreach activities were also carried out.

The overall effectiveness of the conservation education and activities showed 75%, indicating moderately satisfactory result. The study revealed a gap of human-wildlife interaction in the conservation education and activities being undertaken by the Park and the other organizations in the project area. Attention is needed to check and balance the content and audience of the program. Adequate and appropriate conservation activities need to be carried out as early as possible in the vulnerable areas.

The study strongly recommends incorporating human-wild animal interaction issues in conservation education and disseminating them to communities, in particular, the communities residing in the vulnerable areas through various ways constantly. The infrastructures such as museums at Kasara, Tikauli; visitor/information centers and crocodile and elephant breeding centers should be optimally utilized as teaching and learning centers. The information and displays should be updated with more site specific relevant information. The school children in the Buffer zone area should be made mandatory to visit such centers as outdoor activities at least once a month. At least one class in a week about the wild animals and their behaviours, ecology, safe guarding tactics should be continuously taught to students of the schools located in the Buffer zone. Similarly, such education about wild animals and tactics to be alert are to be disseminated through appropriate media such as radio, television street drama, etc. to the communities in the vulnerable areas constantly.

Victims, victims' families and other communities residing in vulnerable areas are to be formalized and institutionalized in order to provide them a platform to discuss human –wildlife conflict issues in detail. Conduction of workshop/interaction meetings and exposure visits for such groups could discuss on effectiveness of the various measures, creative approaches, new and improved techniques, etc. that they have been using or can be used to combat problems from wild animals in their areas. Thus sharing knowledge will help to tackle the worries and mitigate conflict situations. Moreover, they should be taught on how to identify different predators and signs so that appropriate management methods can be put on to decrease the likelihood of future conflict. It is also important to assess the effectiveness of conservation education and activities in order to modify and improve quality of the activity which leads to achieve conservation education goals.

A drawing competition for school children in the Buffer zone of CNP and exposure visit cum conservation awareness for local inhabitants including victims and victims' families from the vulnerable area were carried out. We are pleased to produce a booklet having information regarding wild animals' behaviours, ecology, attacks and tactics to be safe from wild animals such as tigers, rhinoceros, bears and elephants in Nepali language. These will be distributed to local communities and schools. Besides, interaction visit for victims, victims' families and other members in the vulnerable communalities and drawing competition for school children were also carried out during the project period. Such activities should be continued in the project area constantly.

1. Introduction

1.1. Background

The Millennium Ecosystem Assessment (MA) (2005)¹ places human well-being as the central focus for assessment because people make decisions concerning ecosystem based consideration on behalf of their own well being first, and this greatly effects biodiversity conservation. The Nature Conservancy's Chief Executive Officer Tercek says "People are an inextricable part of virtually every ecosystem on the planet and people depend on nature for their survival." "The better we are at ensuring that people get (nature's) benefits, the better we'll be at doing conservation" (Dunkel 2011). Gorenflo (2006) stated "Conservation of biodiversity greatly depends on how well it supports or value for human use." This is agreeable and true in the case of Nepal as well. For instance, the community forest in Nepal is one of the successful examples of restoring forests and wild animals due to the associated benefits that the local people get from forest restoration for which they work hard. Smith et.al. (2010) reported that forest management in the surrounding Park has not only helped people themselves in terms of ecological services- benefits people obtain from ecosystem (MA 2005) but also became the primary driver of improving tiger habitat and tiger conservation in Nepal.

However, regeneration of forests has created lots of conflicts between humans and wild animals visiting the surrounding forest. A lot of local people are afraid of tigers and leopards attacking their domestic animals; rhinoceros, elephants, bears and other animals for destroying crops; and they have fear of encountering wild animals which could lead to them death or injury. For example, a total of 424 people were attacked by various wild animals such as tigers, rhinoceros, elephants and bears leading to death and injury in and around Chitwan National Park (CNP) of Nepal in between 1997/98 to 2007/08 (Nakarmi 2009). One research revealed that number of man eating cases by tigers within and surrounding Chitwan was increased 6.8 times (7.2 ± 6.9 persons per year) compared to the previous 20 years (1.2 ± 1.2 persons per year) (Smith et. al. 2010 and Gurung 2008). But should we stop the practice of having people manage their community forests because of wild animals in the vicinity? Obviously not, because forest resources are fundamental to their livelihood and people value the benefits of the community forests. The concern is, if the wild animals' population is not managed, people will kill them in retaliation and/or compel the wild animal conservation authority to kill or dispose of so called 'problem animals' from their area. For instance, eight man- eating tigers and one lion were shot in Kumaon in early 1900s for they killed 1100 people (Corbett 1991 cited in Macdonald and Sillero 2002). Likewise, in between 1979 and 2005, a total of 25 tigers were captured in CNP because they became man eaters and created problems in the local areas. In 2004 alone, six problem tigers were captured in CNP; 5 were killed and one was kept in captivity (Gurung 2008). Many of these tigers were residing outside the Park when they were captured. So, it can be assumed that tigers and other animals becoming resident in the Buffer zone might increase because of the growing regenerated forest in the Buffer zone, increased tigers and rhinoceros in and around the Park and the degraded forest quality in the Park. Recently conducted tiger and rhinoceros counts reported that 34 tigers and 95

¹ Millennium Ecosystem Assessment (MA) was designed to meet the needs of the Convention on Biological Diversity (CBD), an international treaty to sustain the rich diversity of life on the Earth. More than 1,360 scientists from 95 countries contributed to the assessment.

rhinoceros have increased in CNP (DNPWC/Press Release 2011). This is a promising sign of conservation efforts. But, the increased trend of retaliatory and obligatory killing or disposition of problem animals coupled with emerging poaching of such animals for their commercially valued body parts in and around CNP have posed a big challenge for protection of rare and endangered wild animals leading to extinction. For example, researches revealed that fewer than 25 breeding tigers can result in a rapid decline in the population size and could even result in extinction (Kenny et. al.1995 cited in Smith et.al. 2010).

Noticeably, human activities and their effects on wildlife are increasing rigorously since the end of the 20th century and the beginning of the 21st century, for which scientists call a “crisis of extinction” (Devall, 2006). The 2003 edition of the International Union for the Conservation of Nature (IUCN)’s Red List² of Threatened Species, compiled by the World Conservation Union (WCU), in Geneva, listed 12,259 plant and animal species as threatened with extinction mostly due to human activities. Scientists with the WCU believe the extinction rate for species is 1,000 to 10,000 times higher than it would be under natural condition, which are conditions that have not been extremely modified by activities of humans in a globalizing economy (Devall, 2006). There are many examples which support this belief. Species most exposed to conflict are also shown to be more prone to extinction (Ogada et.al., 2003) because of injury or death caused by humans. Dickman A. et.al. (2011) reported one of the greatest challenges in biodiversity conservation today is “how to facilitate protection of species that are highly valued at a global scale but have little or even negative value at local scale.” “Human actions are fundamentally, and to a significant extent irreversibly, changing the diversity of life on Earth, and most of these changes represent a loss of biodiversity” (MA 2005). And, the challenges of conserving biodiversity seems to persists in upcoming decades as human population is expected to increase from 6.5 billion in early 2006 to about 9.1 billion by 2050 (Gorenflo et. al. 2006). Study also suggests that human population growth is correlated proportionately with the number of encounters and serious incidents involving cougar (*Puma concolor*), black bear (*Ursus maritimus*) and grizzly bear (*Ursus arctos*) (Ministry of Water, Land and Air Protection, British Columbia, 2003, quoted in Distefano, E., 2005). A study done in Bandipur, Karnataka reported that man-animal conflict has increased over the years where there were more agricultural fields and human habitation (The Hindu 2005). This situation is likely in CNP. Thus, this situation is very critical and it is time for the Park management to consider what will happen if this situation continues and, on the part of the inhabitants, to consider what will happen if there are no wild animals and no tourism.

Studies revealed that conservation cannot be done in isolation because there is intimate relationship between life and the resources. Smith et. al (2010) reported that humans are the primary agents of change in numbers of tigers and tiger habitat quality, so it is equally important to focus conservation efforts to understand human behaviours that impact tigers and their habitat. Naess (1979), through his study of relationship of farmers in rural areas of Norway, which is a habitat for wolves and bears, suggested that successful co-existence of humans and wildlife requires strong support by local communities of specific ethical principles.

²IUCN Red List- International conservation tool to identify those species most in need of conservation attention and provides a global index of the conservation of biodiversity - Wikipedia/IUCN

Efforts to expand biodiversity conservation and protected area management must consider the human context (human presence and resource use by them) of any potential location (Brandon 2002 cited in Gorenflo 2006 and). Dickman et.al (2011) refereed the best chance of effective conservation relies upon translating the global value of carnivores into tangible local benefits large enough to drive conservation "on the ground." The 5th World Park Congress (WPC)³ held in 2004 also brought human–wildlife relationship to the global stage as part of an effort to address the current challenges facing protected area management and conservation (Francine 2004). Similarly, the Convention on Biological Diversity (CBD) has also emphasized the identification and removal of barriers for adequate participation of the community members in all levels of protected areas (PAs) planning, establishment, governance and management (CBD 2004). Until and unless local community people are positively engaged in conservation efforts, successful conservation would be found to be mentioned only in the papers and not in the reality. Therefore, management of people is vital to make conservation successful.

In Nepal, since implementation of community involvement approach in conservation in 1986, there has been remarkable contribution of community to wildlife conservation. Feelings of ownership, exploration of alternatives for livelihood, participation in conservation activities and ecotourism development have been gradually achieved for the sake of conservation. Despite these achievements, there are still some gaps in achieving conservation goals. Experience revealed a big challenge in finding ways and means to improve governance, active and effective participation and equity and enabling activities relating to conservation of wild animals. So, for promoting the continued conservation and stewardship of wild animals, there still requires an understanding - to which extent, and how the conservation information has been communicated with the concerned stakeholders and how they have perceived it.

Clear and good understanding about wild animals by local inhabitants (one of the stakeholders) is a necessity to get their favourable support in conservation activities. Regular conservation education and information dissemination to community people are the most common proactive management action to tackle this situation. This can be done in both formal and informal ways. Education at schools and institutions is a kind of formal way while education in the outset of schools through mass media such as television, radio, posters, pamphlets, libraries, zoos, games, etc. where people generate knowledge by seeing and doing is a kind of informal way. However, the reflection of the education depends on how the acquired knowledge and skill have been considered into practice. I am saying this by agreeing with S.K. Jacobson (1991) because in many cases, per se in wildlife conservation, participants may say that they believe in wildlife conservation, but their actions may not reflect this. Only good and satisfactory participation in activities are not enough to measure the real effect (Stokking 1999). Despite many efforts put towards maintaining relationship between human and wild animal, there is no desirable result. Effective participation, especially, the local people who greatly depend on forest resources for their daily living and those who are troubled by wild animals is hard to achieve. Conservation of wild animals greatly relies on how local people have been affected and benefited by conservation of wild animals.

³ The 5th WPC was held in Durban, South Africa in September 2004; 30,000 PA experts had participated in the Congress

It has been observed that local people of Sauraha who have been less affected and more benefitted compared to those of Madi Valley who suffer more from the surrounding wild animals, are positive towards conservation of surrounding wild animals (Personal observation). So, peoples' attitude and behaviour change are very important aspects to be considered for their true and effective involvement. And, strategic use of communication, education and public awareness is vital to cater this situation (Hesselink 2007). Both 'rights' and 'responsibilities' are to be clearly communicated to community people for true and long term involvement of them in conservation efforts. For example, people, especially those living in close proximity, shall be constantly communicated and advocated regarding all aspects, such as wildlife's status, their number, their benefits, threats, etc. in national and global level along with responsibilities of taking care of such treasures.

The Department of National Parks and Wildlife Conservation of Nepal has been carrying out conservation education and activities as one of the key agendas in order to raise awareness on conservation of wild animals. However, it has not been achieved so far due to many reasons. Based on the first project (Ensuring Human-Wildlife Conflict in Nepal, a case study of wildlife-induced human casualty in CNP), a constant spread of knowledge about tigers, rhinoceros, elephants, bears and other animals, as well as possibilities of alternative livelihood opportunities were identified as important aspects in order to maintain harmony between wild animals and the local community in CNP. The more we can impart knowledge about these animals, about their biology, ecology, number and tactics of living with wild animals, the better the local people can tackle their worries and work constructively with damage prevention and conflict resolution measures (Ericsson et.al. 2002). Locals can be obstacles or partners in the protection and conservation of wild animals. They can be conservation partners if they have adequate information about wild animals and can be shown viable alternate livelihood opportunities. With this value, this project was designed to educate local people about the behaviour, ecology and teach those tactics on how to be safe from wild animals, and more importantly, maintain harmony with wild animals; while utilizing the resources from their surrounding forests.

1.2. Objectives of the Project

The main aim of the project was to impart knowledge to local inhabitants about wild animals' ecology, behaviour and tactics to be safe from aggressive wild animals to foster conservation efforts for human-wild animal co-existence in Chitwan National Park and the Buffer zone.

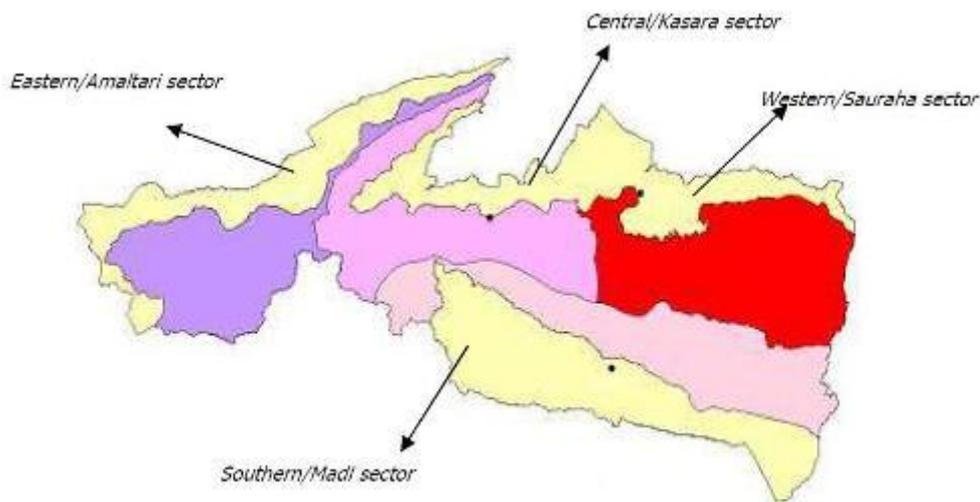
The specific objectives of the project were:

- To assess the existing conservation education program.
- To impart knowledge to local inhabitants on wild animals' behaviour and tactics to be safe from aggressive wild animals such as tigers, rhinoceros, elephants and bears.
- To conduct a drawing competition on "human-wild animal co-existence" to school children in the Buffer zone of CNP.

2. Project area

2.1. Location

The Buffer zone area of Chitwan National Park (CNP), located in the southern central part of Nepal was the site chosen for this project. Chitwan National Park is the first national park of Nepal which was established in 1973. It has also been designated as a World Heritage Site since 1984. An area of 750 sq. km. around the Park was declared as buffer zone in 1996 with an aim of biodiversity conservation in the Park through improvement of socio-economic conditions of the inhabitants (DNPWC/PPP, 2001) near the Park. The Buffer zone is situated between longitudes $83^{\circ} 50' 44''$ – $84^{\circ} 44' 58''$ E and latitudes $27^{\circ} 16' 56''$ – $27^{\circ} 42' 13''$ N. This has been divided into four sectors viz. Central/Kasara, Eastern/Sauraha, Southern/Madi and Western/Amaltari sectors (Picture 1). Every year fifty percents of the Park's revenue is ploughed back to manage the Buffer zone. This budget has been utilized for community development and resource conservation purposes in the Buffer zone.



Picture 1. Chitwan National Park and four management sectors

2.2. Flora and Fauna of the Project Site

The Buffer zone of CNP is a home to many flora and fauna. The land cover in the Buffer zone is dominated by cultivated land i.e., more than 52%, followed by 37% forest land, 1% shrub land and 1% grassland (DNPWC/PPP, 2001). Rice, wheat, maize and lentils are the major crops grown in the cultivated lands. Likewise, Sal forest, Riverine forest and grassland comprising of tree species such as *Shorea robusta* (Sal), *Terminalia tomentosa* (Asna), *Lagerstromea parviflora* (Banjhi), *Syzygium cumini* (Jamun), *Bauhinia vahhi* (Vorla), *Vitis latifolia*, *Bombax ceiba* (Simal), *Dalbergia sisoo* (Sisoo), *Acacia catechu* (Khayar) and grass species such as *Saccharam orundinacium* (Dhaddi), *Saccharam spontanium* (Kans), *Phragmites karka* (Narakat), *Imprerata cylindrica* (Siru) and *Narenga porphyrocoma* (Khadai) represent forest and grasslands. Community forest has been increased from 893 ha in 1997/98 to 3621.63 ha by 2007/08 in the Buffer zone of CNP (Annual Report/DNPWC, 2007/08).

The diverse vegetation and the cultivated fields along with several wetlands in the Buffer zone have provided home to many small and big wild animals. Some wild animals become resident and others visit quite often in the Buffer zone. However, there is no comprehensive data of wild animals residing and breeding outside the Park. Rhinoceros, tigers, leopards, elephants, bears, deer, birds and reptiles are quite often the sighted wild animals in the Buffer zone. Recent census on tigers and rhinoceros reported increased tigers and rhinoceros in CNP (DNPWC/Press Release, 2011). Local people keep cow, ox, buffalo, goat, etc. to meet their protein needs, to plough fields and also to collect feed material for biogas plant to supply methane gas as an alternative source of fuel for household use.

2.3. Demographic Features

There are a total of 223,260 people who inhabit in 36,193 households (average family size: 6) in the Buffer zone (DNPWC, 2001). People here are mixed with Tharu (26%) and indigenous people such as Darai/Kumal/Praja (5.5%) and Majhi/Mushar/Bote (2.7%) along with various ethnic groups migrated from the hills. The ethnic groups consist of Newa, Gurung, Magar, Tamang (Janajati) (17.6%), Brahmin/Chhetri/Thakuri (38.3%) and Damai/Kami/Sarki (9.0%) (DNPWC, 2001).

People of the Buffer zone largely depend on agriculture, the Park resources, tourism and trade for their livelihood. The land use scenario shows that people of Madi, Kasara and Amaltari are heavily engaged in agriculture than that of Sauraha sector. In Sauraha, the people have been greatly involved in the tourism business (Personal observation and DNPWC/PPP, 2000).

2.4. Human-Wild Animal Interaction

Local people very often complain about crop raid by wild herbivores and livestock and cattle taken away by wild carnivores. Such movement of wild animals also often creates higher chances of encounter with people, resulting in deaths and injuries of both people and wild animals. This increases the conflict between the Park and the local inhabitants.

It has been found that the human casualty is proportionate to the land use for forest and cultivation. For instance, over 36% of the total deaths (98) and over 29% of the total injuries (326) took place in Madi sector where there is more than 70% of total forest coverage, 25066.5 ha and 26.6% of total cultivation land, 35502.5 ha (Nakarmi, 2009). This is followed by Kasara, Amaltari and Sauraha sectors. Gurung (2008) also reported the highest 31% casualties of total 88 deaths occurred in Madi sector. Amongst all sectors, Sauraha sector is the least affected both in terms of death and injury of people (Nakarmi, 2009).

Victims and victims' families receive \$1923 (NRs⁴. 150,000.00) as relief amount in case of death, a maximum of \$641 (NRs. 50,000.00) for serious injury⁵, and a maximum of \$ 64 (NRs. 5,000.00) for simple injury⁶ by wild animals (Wildlife Damage Relief Guideline, 2066). However, the Park Managers and the local people admit that it is bureaucratic, and it

⁴ NRs. – Nepalese Rupees (\$1 = Ns. 78 as of October 2011)

⁵ Serious injury – injury with loss of bodily parts such as eye, limbs, etc. (handicapped)

⁶Simple injury – injury without loss of bodily parts

also takes a long time to release relief fund. In a recently occurred incident in Madi Valley, a victim did not get compensation as provisioned even after 5 months of incident. Later, the Park management and the Buffer Zone Management Committee had to give some money assuming reimbursement from the Ministry of Finance later on. Since quick and sustainable relief mechanism is crucial to maintain public temperament, the effective implementation of the new guideline seems doubtful if the guideline is not revised to make it more transparent and decentralized (Budhathoki and Nakarmi, 2011 and Nakarmi, 2009).

Poaching of wild animals for their commercially valued body parts is a growing problem in the project site. There is penalty of US\$ 1923 (NRs. 1,50,000) and/or 10-15 years imprisonment approved by the Government for poaching activities.

2.5. Others

There are several wetlands of national and international importance in the Buffer zone. Frequently occurring flood and the resulting flow of the boundary Rivers such as Rapti, Reu and Narayani erode farmlands and settlements of the people residing near these rivers which have aggravated the relationship between the Park and the local inhabitants.

3. Methodology

3.1. Preliminary Field Visit

Firstly, the Department of National Parks and Wildlife Conservation (DNPWC) of Ministry of Forest and Soil Conservation, Nepal was visited and received a permit to work in Chitwan National Park and the Buffer zone. After that Chitwan National Park Office and offices of Buffer Zone Management Committee (BZMC⁷), Buffer Zone User Committees (BZUC⁸), Biodiversity Conservation Center (BCC), a project of National Trust for Nature Conservation and Terai Arc Landscape Project (TAL) of World Wildlife Fund, Nepal (WWF/N) were visited. I interviewed with the Park Warden, Buffer Zone Management Committee and Buffer Zone User Committee members, local people, BCC and TAL project personnel during this visit to collect baseline information and gaps regarding Conservation Education and Outreach Program being conducted by these organizations in the project area.

3.2. Literature Review

Necessary information on conservation education and activities were collected through secondary sources such as Management Plans, Species Action Plans and other reports.

3.3. Visits, Observations and Interviews with Concerned Personnel

The visitor/information centers, museums, crocodile breeding center, elephant breeding center were visited and observed in order to better understand about the content, displays, type and number of visitors etc. in these centers. The published posters and publications by

⁷ BZMC- local level apex body formed with representatives from all BZUCs

⁸ BZUC- community level body formed in each Village Development Committee, an administrative units of the district.

various organizations to foster conservation education and activities were also collected and observed.

3.4. Assessment of the Existing Conservation Education and Activities

The assessment of the existing conservation education and outreach program was done based on three major elements viz. planning, process and product.

Definition of criteria

Five different criteria (0-4) of conservation education and outreach program were developed with the optimal condition having the highest value for each variable and sub variable. These criteria were defined based on the information contained in the management plan, regulations, species action plans, guidelines and other existing planning instruments and interviews with the concerned stakeholders.

Rating of indicators

The percentage weighing was adapted from the ISO 10004 standard, tested in the evaluation of quality of services offered by private and public enterprise. The rating was carried out by means of specific matrices for each variable, using the five rating level ranging from 0 to 4, where 4 refers to optimum value. In some cases the values were assigned by simple percentage ratios comparing the existing situation and the optimum and in other cases by specific qualitative criteria or combinations of criteria. Then an overall score for each variable was calculated by combining the scores of its associated sub variable. Stringent scoring formulas could not be applied to some variables in this study. The percentages obtained were interpreted in terms of its effectiveness using the 5 management levels from unsatisfactory to very satisfactory as reference. The details of the rating are shown below in Table 1.

Table 1: Rate of Effectiveness

Rating	% of Optimum	Significance
0	< 35	Unsatisfactory
1	36- 50	Minimally satisfactory
2	51- 75	Moderately satisfactory
3	76-90	Satisfactory
4	91-100	Very satisfactory

Source: Cifentes A. M. et. al., 2000

3.5. Data analysis

Quantification of data obtained was achieved through tabulation and counting. Information collected was analyzed, cross checked and verified with the data collected from other sources. Results were presented in the tabular form of totals, percentages and averages. This study tried to explain qualitative information to quantitative terms. The judgment was based on visual impressions, secondary sources and interaction with respondents including local people.

3.6. Conduction of Proposed Activities

Two activity based objectives such as imparting knowledge to local inhabitants on wild animals' behaviour and tactics on safety from aggressive wild animals such as tigers, rhinoceros, elephants and bears and conducting a drawing competition on human-wild animal co-existence to school children from the Buffer zone of CNP were carried out.

4. Results

4.1. Overview of Human Death and Injury in CNP between 2008/09 to 2009/10

As of updating, the data of human casualties by wild animals which took place in and around CNP after the first project was collected. Eight casualties took place inside and outside protected area in 2008 (After the first project). Two persons were killed by tiger near Narayani River. One of them was killed while fishing in the River illegally. Likewise, one four- year old baby was killed by a wild elephant and his mother and an uncle were injured by the same elephant. The wild elephant came to the village due to the domesticated elephants in the elephant shade (Hattisar), located in less than a kilometre from the village. Similarly, one person was killed by a rhinoceros. Besides, a person was injured by bear while cutting grass in the community forest and another person was injured by a boar while collecting fuel wood illegally in the Park.

More than ten human casualties occurred in Chitwan National Park and the Buffer zone in a seven month period between August 2009 and February 2010. Five persons were killed by tigers; two persons were killed by rhinoceros and one person each by an elephant and a Bos Gaurus. One person was injured by a Bos Gaurus. One person was killed by a tiger out of the Buffer zone. Among the ten casualties, three were women and seven were men. The age of the deceased varied from 35 years to 70 years old.

4.2. Understanding the Existing Conservation Education and Activities in the Project Area

4.2.1. Conservation Education and Activities in the Project Area

The ambition of conservation education and activities in the project area is to increase people's knowledge, appreciation, motivation and skills towards wild animals conservation in order to achieve solutions for both conservation of wild animals/nature and sustainable community development.

4.2.2. Organizations Involved in Conservation Education and Activities

There are mainly three organizations working to raise awareness regarding wildlife conservation in the project area. The Department of National Parks and Wildlife Conservation (DNPWC) under the Ministry of Forest and Soil Conservation is a major Governmental organization involved for conservation education and activities. The DNPWC, through its Park office in Chitwan collaborates with the Buffer Zone Development Committee (BZDC) and the underlying twenty-two Buffer Zone User Committees (BZUCs) in order to implement conservation education and the related activities in the project area.

Each Buffer Zone User Committee (BZUC) represents a Village Development Committee (VDC). Each BZUC prepares conservation education and activities for a whole year from the user groups' level. The Non Governmental Organization (NGO) active in conservation education and activities in the study area is the National Trust for Nature Conservation through its Biodiversity Conservation Center (BCC), located at Sauraha. Likewise, a foreign aid organization such as the World Wildlife Fund has been implementing conservation education and activities through its Terai Arc Landscape Project (TAL), which is also located at Sauraha. These three organizations have been partnering and collaborating with local organizations such as schools, anti-poaching operation units and youth clubs to conduct conservation education and activities in the project area.

4.2.3. Conservation Education Program being Conducted by the Park, Buffer Zone Development Committee and the Buffer Zone User Committees

A number of conservation awareness programs have been conducted through formal and informal ways in the project area. Conservation Education is one of the regular activities being conducted annually by the Park management through its buffer zone management program. Celebration of special days and weeks such as World Wetland Day, International Mountain Day, Wildlife Week, and International Day for Biological Diversity, World Environment Day, public meetings, broadcasting, and conservation message through local and national mass media such as radio, television and local FM stations are some of the many activities being conducted for raising awareness among public. Besides, school education program, video shows, wildlife games, competitive events like elocution, essay, quiz, art etc. targeting youths and school children are being conducted in the Buffer zone. Furthermore, the Department regularly publishes and distributes promotional materials such as brochures, posters, newsletter and bulletins. In addition, print and electronic media are in use to disseminate the conservation message.



Picture 2: Some posters published for raising conservation awareness

4.2.4. Conservation Education and Activities being conducted by Biodiversity Conservation Center (BCC)

The Biodiversity Conservation Center (BCC) has been conducting conservation education program through various activities. Green Force Clubs and Environmental Teachers' Forum were formed in the study area for this purpose. Environmental awareness, School endowment fund, Conservation awareness camps, Capacity enhancement (training for school teachers), School greenery program (Plantation in the school area), Conservation radio program (Conservation based songs, poems, interviews and project updates), Sign posting, Environment day celebration, Conservation education publication (Posters, pamphlets etc.), Establishment of a wildlife museum and Nature guide training are major activities conducted by BCC in the project area.



Picture 3: Conservation information center/wildlife museum at Sauraha

4.2.5. Conservation Education Program being conducted by Terai Arc Landscape Project (TAL)

The Terai Arc Landscape Project of the WWF Nepal has also been actively involved in the conservation of wildlife in the study area. Conservation games, Conservation Songs, Non formal conservation education for women, 50 Hours in school, Eco-clubs, Youth-network, Radio program, Publication (e.g. Notebook-Tiger, brochures -Ghadiyal), Material support Anti Poaching Operations and alternative energy support are some activities being conducted by the project for the conservation of wildlife and raising awareness in the project area. Recently, the Park and the TAL/WWF Nepal provided training to domesticated elephants and the elephant handlers in order to teach and enable them to chase away wild elephants that visit in the settlements.

Although many activities have been carried out, some gaps were noticed which have been affecting effectiveness of conservation education and activities. These are as follows.

Table 2: Summary of the Conservation Education and Activities and Gaps

Conservation Education	Conservation Program	Gaps
Exposure and Observation visits	Plantation	No address of human wildlife conflict issue as per need.
Radio program	Grassland management	
Calendar, pamphlets, etc. publication	Interaction program on conservation of rhino and tiger	
Eco clubs	Electric/solar fencing and repairmen	
Hoarding board	Grants for installing biogas plants	
Conservation song competition	Stipend for education	Conservation education had not reached to the Vulnerable community (victims) as desired.
Cultural sites management	Salary for forest guard	
Marking conservation events such as Wildlife week, Environment Day etc.	Grants for building toilets	
Community forest management		
Training on forest management		

4.3. Assessing the Existing Conservation Education and Activities

The overall assessment of the existing conservation education and activities was done on the basis of planning, process and product related to this activity.

Table 3: Variables and Sub-variables for Assessing Conservation Education and Activities

Variables	Sub-variables
Planning	Goal and objective
	Content
	Audience
Process	Administrative structure
	Funding
	Infrastructure
	Methods
	Communication and collaboration
Product	Publications
	Participation

4.3.1. Assessment of Planning Variable of Conservation Education and Activities

Goals and Objectives of Conservation Education and Activities

The conservation education program and activities have been clearly addressed as one of the goals and objectives of the Park management in the Management Plan of Chitwan National Park, 2006-2011. Likewise, species conservation action plans such as Elephant Conservation Action Plan for Nepal, 2009-2018; Tiger Conservation Action Plan for Nepal, 2008-2012 and Greater One-Horned Rhinoceros Conservation Action Plan for Nepal, 2006-2011 have addressed about conservation education and activities in order to raise awareness and to build greater and effective partnership to resolve human-wildlife interaction with respect to the stated animals. These were implemented somehow in the fields. Therefore, based on this, it can be concluded that the conservation education and activities have been clearly addressed in the plans. So it has received Value 3.

Table 4: Rating

Criteria	Value	Reached Value
Conservation education and outreach activities have been clearly addressed in the Management Plan, Species Conservation Action Plans, and other documents of the Park management. They are implemented with very high priority.	4	
Conservation education and outreach program have been clearly addressed in the Management Plan, Species Conservation Action Plans (Some animals), and other documents. Implementation is performed somehow to some extent.	3	√
Conservation education and outreach program have been clearly addressed in the Management Plan, Species Conservation Action Plans, and other documents. However, implementation is not always a priority	2	
Conservation education and outreach program have been inadequately addressed in the Species Conservation Action Plans.	1	
Conservation education and outreach program have not been addressed in any official documents.	0	

Content Appropriateness of Conservation Education and Activities in the Study Area

Review of the content and observation of the products show that throughout the government and other organizations, conservation education schemes revolve around introduction, habitat, impact of biodiversity loss and poaching of wild animals particularly, about flagship species such as tigers and rhinoceros in the project area. The education materials developed so far are found to be focused on slogans for introducing and protecting these animals. The activities such as drama, speech, quiz wiz; games, etc. also focus more towards protecting wild animals. However, these activities have not encompassed 'human-wild animal interactions,' one of the important elements. This element could have been included in the educational program and activities to make them more suitable and useful to the area. For example, in the drawing program, majority of the participants said that the human-wildlife interaction subject matter is quite new to them especially, to reflect in drawings. This indicated less knowledge about that element among the school children although they have been going through interacting with wild animals in various ways in their everyday life. Therefore, content is not adequate in terms of human-wild animal interaction in order to achieve the stated goals and objectives in the management and species action plans.

This information made this sub-variable to receive Value 3.

Table 5: Rating

Criteria	Value	Reached Value
High coverage of all updated new information regarding introduction, behaviour, ecology, importance, poaching of wild animals, impact of loss of wildlife, human wildlife interaction and is suitable and useful for the area.	4	
Conservation education covers introduction, ecology, behaviour, poaching, conservation of wildlife and biodiversity and impact of biodiversity loss but no coverage of human wildlife interaction issues which could have been included to make the program more suitable and useful to the area.	3	√
Moderate coverage but with all aspects from protection, uses and is suitable to the area.	2	
Little coverage with old/outdated information and very little information on human-wildlife interaction not suitable to the area.	1	
Has no relevant information on wild animals and is not suitable to the area.	0	

Audiences/Participants for Conservation Education and Activities

A number of education programs in CNP are found to be targeted to audiences formally in the school system, and informally in programs for rural communities of the areas including special groups such as adults and youths. However, these programs could not reach to the vulnerable communities particularly; victims and victims' families who also need to have good understanding of human-wildlife interaction. This sub variable received the Value 3.

Table 6: Rating

Criteria	Value	Reached Value
Conservation education and activities is designed for all types of audiences such as school children, community people including youths, adults, women, vulnerable groups, etc.	4	
Conservation education and activities are designed mostly for school students and youths.	3	√
Conservation education and activities are designed just for school students.	2	
Conservation education and activities are designed just for school students.	1	
Conservation education and activities has no audience.	0	

Table 7: Assessment of Planning Variable of Conservation Education and Activities

0= Unsatisfactory 1= Minimally satisfactory 2= Moderately satisfactory 3= Satisfactory 4= Very satisfactory	Goals and Objectives	Content	Audience	Total reached	Optimum total	% of optimum
CNP	3	3	3	9	12	75
Optimum total	4	4	4			
% of optimum	75	75	75			

4.3.2. Assessment of Process Variable for Conservation Education and Activities

Administrative Structure

The Department of National Parks and Wildlife Conservation has a separate unit for conducting and dealing with conservation education and activities in the protected areas including CNP. This unit has ability to establish links and maintain good contacts with different organizations to obtain short-term financial and technical support in relation to conservation education and activities. The Park has established links with potential sources. The relationship is good which supports conservation education and activities in the project area. Based on this information this sub variable has received Value 3.

Table 8: Rating

Criteria	Value	Reached Value
Have the best separate unit of conservation education and activities which establishes links with potential partner/collaborative sources and to maintain good relationships with them.	4	
Have good capacity to establish links with potential partners/collaborative sources and to maintain good relationships with them.	3	√
Moderate capacity to establish links with potential partner/collaborative sources. The relationships are not always the best, which hampers the possibilities of permanent financial support.	2	
Low capacity to establish links with potential partner/collaborative sources; relationships are rare and indirect. The possibilities of financial support are scarce.	1	
There are no direct or indirect links with possible partner/collaborative sources.	0	

Fund for Conservation Education and Activities

Fund for Conservation education and activities have been derived from the fifty percent revenue that the Park generates annually. Out of the fifty percent, ten percent is used for conservation education and thirty percent is used for conservation activities and the rest is

used for community development, income generation and administrative expenses as shown below. Thus there is regular fund for conservation education and activities in the project area. However, the amount of budget varies according to the revenue generated by the Park annually. Moreover, release of this budget is not always timely.

- Community development 30%
- Conservation program 30%
- Income generation 20%
- Conservation education 10%
- Administrative expenses 10%

Table 9: Rating

Criteria	Value	Reached Value
There is secured fund from the concerned department. Transfers always arrive within the set deadline.	4	
There is secured fund from the concerned department. Transfers are carried out by the set deadline with small occasional variation.	3	√
There is secured fund from the concerned department. Transfers are carried out regularly with predictable variation.	2	
There is secure fund from the concerned department. Transfers are very irregular which makes it difficult to carry out plans.	1	
There is no secured fund from the concerned department. Transfers are totally irregular.	0	

Communication and Collaboration

The Park has been communicating, coordinating and collaborating with local organizations such as schools and youth clubs through buffer zone development program. Likewise, it has been working in close collaboration with organizations like TAL and BCC in terms of technical and financial support for raising conservation awareness in the project area.

Thus this sub variable received the Value 3.

Table 10: Rating

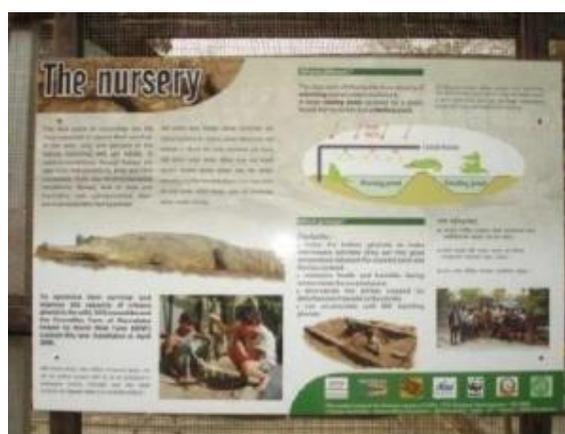
Criteria	Value	Reached Value
There is well planned communication, coordination and collaboration system in terms of technical and financial capacities and are desirably effective and efficient with all levels of stakeholders. There is no complaining from the stakeholders.	4	
There is communication, coordination and collaboration system in terms of technical and financial capacities and are desirably effective and efficient with all levels of stakeholders. But there is seldom complain from the stakeholders.	3	√
There is no planned communication, coordination and collaboration with all level of stakeholders but it occurs as per the need and there are some gaps.	2	
There is very less communication and coordination among the concerned stakeholders.	1	
There is no communication and coordination among the concerned stakeholders.	0	

Infrastructure for Conservation Education and Activities

There is one museum at Kasara and one at Barandabhar near by the highway. There is one visitor/information center at Sauraha sector. The information is both in textual and pictorial form. The content seemed to be more textual for general visitors but is useful for the visitors doing research or study related to wild animals. Likewise, there is a crocodile and elephant breeding centers with a very comprehensive information regarding crocodiles and elephants. However, the information can be updated and modified according to the specific site and with relevant information. For instance, in my observation, since human-wildlife interaction is high in this area, information regarding this issue can also be displayed. So, these infrastructures could have been used optimally in order to raise awareness among the community people regarding human-wildlife interaction.



Picture 4: Information center at Sauraha



Picture 5: Crocodile breeding Center

With these observations this sub-variable reached to Value 3.

Table 11: Rating

Criteria	Value	Reached Value
Existing infrastructures are sufficient in quantity and quality to support conservation education and activities. They are placed strategically to meet most needs. These are used optimally.	4	
There are some infrastructures with some information about wildlife but they lack some area specific information. These could have been used optimally with strategic modification.	3	√
There are some infrastructures. They are not of good quality but are strategically located to carry out some activities.	2	
There are not enough infrastructures and they are of poor quality. Their condition does not allow for the many activities.	1	
There are no infrastructures and or they are so badly deteriorated that they cannot be used for conservation education and activities.	0	

Method of Conduction of Conservation Education and Activities

Conservation education is not addressed in the Nepalese national education curriculum as a part of the formal education curriculum. However, the conservation education is being taught under the Environmental Science subject. Conservation education is taught in schools. School teachers are trained in conservation education by the Park, BCC and TAL to enable them to teach wildlife conservation to students. Another way is to provide

education through informal ways through media such as Radio program, quiz-wiz, dram, songs, games etc.

Based on this information this sub variable received the Value 3.

Table 12: Rating

Criteria	Value	Reached Value
Conservation education and activities are carried out intensively covering all levels of audiences and relevant information regarding conservation of wild animals and their interaction with human kind.	4	
Conservation education and activities are planned but taught to some extent to various types of members in the Buffer zone.	3	√
Conservation education and activities are conducted only during nature and conservation related days.	2	
Conservation education and activities are offered only during park visits.	1	
Conservation education and activities are not conducted.	0	

Table 13: Assessment of Process Variable of Conservation Education and Activities

0= Unsatisfactory 1= Minimally satisfactory 2= Moderately satisfactory 3= Satisfactory 4= Very satisfactory	Administration	Funding	Infrastructure	Communication and collaboration	Methods	Total reached	Optimum total	% of optimum
CNP	3	3	3	3	3	15	20	75
Optimum total	4	4	4	4	4			
% of optimum	75	75	75	75	75			

4.3.3. Assessment of Product Variable of Conservation Education and Outreach Program

Production of Education Materials

The posters, pamphlets, songs, hoarding boards, etc. are some of the many products of conservation education and activities. These products are basically about information on the importance and challenges of conservation of tiger and rhinoceros. The products could be made more adoptable and useful to vulnerable communities who in fact, need very good understanding of human wild animal interaction to live in harmony with the neighbouring wild animals.

Table 14: Rating

Criteria	Value	Reached Value
Sufficient conservation education materials such as posters, booklets, pamphlets, etc. covering all aspects are produced and distributed in the communities in the Buffer zone. This has reached to all levels of communities.	4	
Sufficient conservation education materials such as posters, booklets, pamphlets, etc. covering some aspects are produced and distributed in the communities in the Buffer zone. However, this could not reach to vulnerable communities.	3	√
Insufficient conservation education materials such as posters, booklets, pamphlets, etc. with little information are produced and distributed in the limited communities in the Buffer zone.	2	
Conservation education materials such as posters, booklets, pamphlets, etc. are produced very little and limited distribution.	1	
Conservation education materials such as posters, booklets, pamphlets, etc. are neither sufficient nor distributed in all communities in the Buffer zone.	0	

Participation of Local Community People

Mostly school children are involved in conservation education and activities in the study area. These students are basically involved during nature conservation related days. Participation of other groups of community such as women, communities from vulnerable areas is difficult to assess due to lack of structured programs to these particular groups.

Table 15: Rating

Criteria	Value	Reached Value
There is high number of all levels of community participation in conservation education and activities.	4	
There is high number of community participation in conservation education and activities especially children and youths. But the participation of vulnerable communities is less.	3	√
There are always a particular members' participation in the conservation education and activities.	2	
The participation is always usurped by the elite members and vulnerable communities are deprived of participation.	1	
There is no community participation in conservation education and activities.	0	

Table 16: Overall Assessment of the Product Variable of Conservation Education and Activities

0= Unsatisfactory 1= Minimally satisfactory 2= Moderately satisfactory 3= Satisfactory 4= Very satisfactory	Products	Participation	Total reached	Optimum total	% of optimum
CNP	3	3	6	82750	75
Optimum total	4	4			
% of optimum	75	75			

4.3.4. Summary of the Overall Effectiveness of Conservation Education and Activities

Table 17: Overall Assessment of Conservation Education and Activities

0= Unsatisfactory 1= Minimally satisfactory 2= Moderately satisfactory 3= Satisfactory 4= Very satisfactory	Planning	Process	Product	Total reached	Optimum total	% of optimum
CNP	9	15	6	30	40	75
Optimum total	12	20	8			
% of optimum	75	75	75			

The overall effectiveness of the conservation education and activities showed 75% indicating moderately satisfactory result. It may be because although there are good plans their implementation is not desirably satisfactory. Attention is needed to check and balance the content and audience of the program. Adequate and appropriate conservation activities need to be carried out as early as possible. So, for effectiveness, all the concerned stakeholders particularly, the government and management authority should pay attention to all aspects of conservation education and outreach activities.

Workshop Proceeding

The gaps identified were presented in the workshop having representatives from all stakeholders such as the Park, BZDC, BZUC, Army, NGO, INGO, schools, youth clubs and students, victims and victims' families. The discussion was focused on four wild animals' viz. tiger, rhino, bear and elephant as the first project found that these animals caused more human death and injury in the project area.



Picture 6: Participants in the workshop

In the workshop, the participants were given 5 numbers from 0 to 4 to choose, where 0 is the lowest value and 4 is the highest value. The participants had to decide what number to take according to the explanations provided in each option.

Seventy percent of the thirty participants responded a moderately satisfactory of the conservation education and activities which nearly supported the findings of the assessment. About ten percent participants reported satisfactory and twenty percent participants reported minimally satisfactory conservation education and activities.

4.4. Exposure Visit/Field Seminar

With an aim of offering practical and quality education to the real target group (victims, victims' families and local people in the vulnerable areas), an exposure visit/field seminar was successfully accomplished in Kasarar, Chitwan in May 2011. Thirty-five participants representing victims and locals from the vulnerable areas participated in the program. They were imparted knowledge on wild animals' behaviour, their ecology and tactics to be safe from the aggressive wild animals.

Interaction with Park Warden: This is probably the first time that the victims and victims' families got chance to meet and interact with the Park Warden regarding human-wildlife conflict issue and the existing provisions to tackle this issue. The participants put their opinions and queries regarding their problem and perspective. The participants mainly discussed on the relief amount and protracted process for releasing relief funds in the meeting. The Warden clarified on the provisions and process of relief system. The participants learnt about the compensation program provided by the Government. They absorbed all kinds of information specially designed to compensate for bodily harm caused by wild animals' attack. The participants perceived and marked the program as a very important initiation to maintain relationship between local people and the Park officials.

Discussion on Alternative Income Opportunities: How to rehabilitate the victims and victims' families was another agenda for this activity. This agenda was discussed because, although the Government and other conservation organizations have offers of some kinds of support in order to manage protected area and people, most of the victims and victims' families, who in fact mostly deserve these provisions, were deprived of such opportunities of livelihood. The reasons are, either the information could not reach to the victims and victims' families or they lack some supporting materials to make a claim. In many cases victims and victims' families were mostly the ones to suffer from this hurdle. For example, there is a very good biogas support program in the project area but most victims and victim's families could not access to this provision because there are certain rules and strategies which limit them to access to such opportunity. Many families have been taking care of the land lords' land near by the Park to support their lives. So, they do not have a land owning certificate which is one of the documents that he/she needs to submit while applying for biogas plant installation. Some victims and victims' families do not have enough livestock to feed the biogas plant (animal dung). Likewise, some do not have citizenship, some could not meet the matching fund that they need to pay to get rest of the support and some are not entitled to claim for support due to the reason that the respective incident happened during illegal activities in the Park.

The participants realized and understood that certain limitations/restrictions posed by the Park management authority are reasonable in order to discourage illegal activities in the Park and the forest. They intensively discussed on feasible ways to take care of victims and victims' families without affecting the existing rules and strategies of the Park management authority.

It was found that some victims and victims' families have been doing some kinds of business such as fish farming, piggery to support their living. They requested for support to promote their existing businesses.



Picture 7: Interaction between participants during exposure visit



Picture 8: Participants in the exposure visit

4.5. Drawing Competition for School Children

A drawing competition for secondary level students was successfully accomplished as it was planned in Gaidakot, Nawalparasi in May 2011. The main objective of the program was to impart knowledge on human and wildlife conflict issues to the students as most of them have to go for herding livestock, collecting fire wood and other forest products etc. as their part of lives. Chances of animal attack are high during such activities. The students were given themes of human-wildlife conflict focusing mainly on four wild animals' viz. tiger, rhinoceros, elephant and bear.

The program was made residential as most of the school participants had to come from far away distances. The idea was also to give the students enough time to think or practice drawing in human-wildlife conflict theme. The students participating in the drawing program were provided with an educational experience of wildlife and their behaviour. However, all participants could not enjoy this opportunity due to delay in transportation. Moreover, the message of the program was received lately. All materials for drawing were provided by the program.

Mr. Prabhu Budhathoki, President of Relief Fund for Wildlife Victims opened the program informally with his opening remarks. Ms. Nakarmi briefed on objectives of the program. Representing seventeen schools, twenty two students took part in the competition. The students were inspired to put expression on human and wildlife conflict issues in their drawings.

The students' feelings, compassion and art of reflecting themes into a drawing form were awesome. Prizes including cash and drawing materials were provided to the best three drawings and a drawing by a girl student. The program was greatly acknowledged and appreciated by all participants including students, teachers and judge committees. Finally, Mr. Lal Bahadur Bhandari, the Assistant Park Warden gave closing remarks of the program.



Picture 9: Students drawing arts



Picture 10: An art by a participating student



Picture 11: An art by a participating student



Picture 12: Participants in the drawing program

Limitations

There were some limitations noted in order to implement the project activities. Participation of school children for drawing competition was quite challenging. Although 20 schools were planned to invite for participation, we invited all 47 schools located in the buffer zone. However, there was not participation as expected because of the various reasons. Some of the reasons we understood were:

- Less knowledge on human - wildlife conflict issue on school children especially for drawing purpose.
- Belated receipt of invitation letters by the schools.
- Schools' internal system to send students for participation.
- Some schools did not accept information via phone as a formal invitation. However, we sent letters to the schools in the Buffer zone and we also called the schools just in case if letters would not arrive in time.
- Schools did not want to send students only for participation, so inviting teachers was necessary.
- The date for drawing program was postponed by one day because several schools showed interest to participate however; they had to come from far away distance.

4.6. Educational material produced

A booklet having information regarding wild animals' behaviours, ecology, attacks and tactics to be safe from wild animals focusing on tigers, rhinoceros, bears and elephants has been published in Nepali language (Please see below introductory explanation about a book

in English). These will be distributed to local communities and schools. The schools will be urged to teach this book to the students constantly.

About the booklet

Title: Wildlife-induced damage and tactics to be safe from them.

Purpose: To teach people on ecology, behaviour and tactics of safety while encounter with wild animals.

Animals covered: Tiger, rhinoceros, elephant and bear.

Target: Community people (Children, youth and adults).

Language: Nepali

Structure of the book:



Picture 13: A cover page of a booklet produced to raise awareness among local communities

Cover page

Title: Wildlife-induced damage and tactics to be safe from them

Upper two pictures: These pictures are in Red Cross sign-meaning "Do not do that"

A man trying to usurp a prey caught by a tiger: Message- Never try to usurp the catch if already caught by tiger)

An elephant chasing a drunken man: Message -Never walk in the forest or in front of wild animals while u r drunken.

Lower two pictures: Safety measures when encounter with wild animals.

A woman is trying to chase a bear away with a bifurcating tool: Message-.Use tools to chase animals (depending on animals)

A man climbing up on a tree to be safe from a rhino: Message- Be safe by climbing on trees (depending on animals).

My name and Logos of Rufford and RFWV

Inside the book

- 1- Introduction
- 2- Why animals attack on people?
- 3- How to be safe from wild animals? These are illustrated by pictures and simple Nepali language.
 - Ecology and behaviour of Tiger
 - Circumstances and situations of tiger attack
 - Tactics to be safe from tiger attack

The same pattern is followed for rhinoceros, elephant and bear.

- 4- The existing relief mechanism for the loss caused by wild animals
- 5- What to do if incident happens?
- 6- Contact information to inform about an incident
- 7- Reference
- 8- Writer's introduction

5. Recommendation

Based on the observations and findings, the following actions are needed to be taken into consideration for future management and planning.

1. Formalize and Institutionalize Victims, Victims' Families and vulnerable communities

Victims, victims' families and vulnerable communities should be formalized and institutionalized into groups in order to provide them a platform to discuss about this human - wildlife conflict issues in detail. Once groups are formalized and institutionalized, they will travel through the villages to survey and investigate and keep records of incidents of conflict between wild animals and the local community people. This will enable them with ground level information and also provide platform to share conflict resolution practices that have been used to combat the problem. Moreover, once the victims, victims' families and vulnerable communities are formalized they become tangible in the community and could get more attention while formulating co-existence approaches both by conservation authority and other organizations. For instance, a formalized group would be more influent and can access to opportunities such as loan for enterprise development, fund raising, etc. rather than being in individuals. This could help develop entrepreneurial skills and promote self sufficiency. They would be empowered and can raise voices for obtaining benefits of conservation. But by saying this, it is not to create competitor or obstacle to conservation efforts. This is just a reality which needs to be considered. They are paying the cost of conservation, so they deserve the benefits of conservation at most. This could help motivate them in protection and conservation of wild animals.

2. Teach Villagers to Identify Predator and be Alert

Local inhabitants, especially those residing in vulnerable areas should be constantly imparted knowledge on how to identify different predators and signs so that appropriate management methods can be employed to decrease the likelihood of future conflict. They should be warned about potential area of danger in and around the Park.

3. Continue Conservation Awareness Activities Focusing on Tactics to be Safe from Wild Animals

Awareness raising activities emphasizing conflict issues and tactics to tackle these issues should be constantly carried out in all possible and adoptable ways in vulnerable and other areas. The existing infrastructures such as museums at Kasara, Tikauli; visitor/information centers at Sauraha and crocodile and elephant breeding centers should be optimally used as teaching and learning centers. The information and displays should be updated with more site specific relevant information. The schools in the buffer zone area should be made mandatory to visit such centers as outdoor activities at least once a month. At least one

class per week should be continuously taught on wild animals and their behaviours, ecology and safe guarding tactics to students of buffer zone. Similarly, the vulnerable communities should be given conservation education through appropriate medium such as radio, television, events, etc. constantly. Extracurricular activities such as drawing, quiz-wiz, drama, exposure visits, etc. with pragmatic information should be carried out constantly to motivate students, youths and adults in conservation activities as much as possible.

4. Conduct workshop/interaction meetings regularly for villagers

Interaction meetings, workshops of the villagers should be conducted to discuss on effectiveness of the various measures, creative approaches, new and improved techniques, etc. that they have been using or can be used to combat problems from wild animals in their areas.

5. Evaluation of the Conservation Education and Outreach Activities

There was limited information especially, case studies of effectiveness of conservation education and outreach program. The conservation education and outreach programs should be evaluated regularly to understand about its effectiveness, sufficiency and efficiency. This helps to improve quality of the activities in reaching the conservation education goals.

6. Assessment of Translocation of Problem Animals from their Natural Areas to Other habitats

The trend of translocation of problem animals especially tigers and rhinoceros is a common practice being undertaken by the Park management in order to appease public temperament when human casualty occurs in and around the Park. Two such cases were observed during the field visit. The Park Management had to capture tigers in these cases. So, it is urgent to understand what will happen if the situation continues. Does this really pay a value of efforts put to conserve such wild animals? The findings would not only help the Park management to plan for effectiveness of translocating problem animals, but also help to convince the local people about the ground reality of loss of wild animals from their natural habitat.

6. Conclusion

Having received the value of 75%, the overall effectiveness indicated moderately satisfactory result about conservation education and activities. This indicated that conservation education and activities is not yet enough to meet a need or purpose of maintaining harmony between people and wildlife. The major observation was found on a gap of addressing human-wildlife conflict issues in the conservation education and outreach activities and to cater target audience in the conservation education and outreach activities. For instance, the conservation education and activities still could not reach to the vulnerable communities who need a good understanding of wild animals' behaviour, their ecology and safe guarding tactics. Conservation education is important to this particular group because they are the ones who have to face difficulties and often suffer by the neighbouring wild animals. It has to have valuable intended effect on such group within the community. Qualitative conservation education and activities with relevant information and approach to prime target group is essential in order to meet intended effect. There is notable scarcity of documented conservation education case studies. So, conservation education and outreach

program should be regularly monitored and evaluated to make it more effective to achieve the intended goals.

The conservation awareness raising and drawing activities conducted during project period were exemplary, especially because the theme 'human-wildlife conflict' is very crucial and relevant to the project area. Such information should be continuously disseminated to local communities.

Achieving two different goals - conservation and development, especially, where there is poverty and illiteracy (like in Nepal) is far easier said than done. Until the local community develops a conservation ethics, efforts to promote conservation will have only limited success. However, we also believe on a 'success' through 'perseverance', don't we? So, we need 'patience' and 'persistence.' Good, relevant education advocating both rights and responsibilities along with some motivating incentives to the local inhabitants is imperative to tackle this situation.

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