



5-2008

# Human–Wildlife Conflict and Gender in Protected Area Borderlands: A Case Study of Costs, Perceptions, and Vulnerabilities from Uttarakhand (Uttaranchal), India

Monica V. Ogra  
*Gettysburg College*

Follow this and additional works at: <https://cupola.gettysburg.edu/esfac>

 Part of the [Environmental Sciences Commons](#), [Environmental Studies Commons](#), and the [Nature and Society Relations Commons](#)

**Share feedback about the accessibility of this item.**

---

Ogra, Monica. "Human–wildlife conflict and gender in protected area borderlands: A case study of costs, perceptions, and vulnerabilities from Uttarakhand (Uttaranchal), India." *Geoforum* 39, no. 3 (May 2008): 1408-1422.

This is the author's version of the work. This publication appears in Gettysburg College's institutional repository by permission of the copyright owner for personal use, not for redistribution. Cupola permanent link: <https://cupola.gettysburg.edu/esfac/90>

This open access article is brought to you by The Cupola: Scholarship at Gettysburg College. It has been accepted for inclusion by an authorized administrator of The Cupola. For more information, please contact [cupola@gettysburg.edu](mailto:cupola@gettysburg.edu).

---

# Human–Wildlife Conflict and Gender in Protected Area Borderlands: A Case Study of Costs, Perceptions, and Vulnerabilities from Uttarakhand (Uttaranchal), India

## **Abstract**

Human–wildlife conflict (HWC) is a growing problem for communities located at the borders of protected areas. Such conflicts commonly take place as crop-raiding events and as attack by wild animals, among other forms. This paper uses a feminist political ecology approach to examine these two problems in an agricultural village located at the border of Rajaji National Park in Uttarakhand (formerly Uttaranchal), India. Specifically, it investigates the following three questions: What are the “visible” and “hidden” costs of such conflict with wildlife? To what extent are these costs differentially borne by men and women? How do villagers perceive any such differences? Survey and interview data were collected from over 100 individuals in the study site over a period of 9 months in 2003–2004. It was found that for participants in this study, costs of HWC included decreased food security, changes to workload, decreased physical and psychological wellbeing, economic hardship, and at times an increase in illegal or dangerous activities. The research also showed that although women in the study area bore a disproportionate burden of these effects, roughly half of survey respondents perceived that men and women were equally affected. A possible explanation for this gap considers the relationships between gendered uses of space, work, status, and identity. The findings illustrate the importance of addressing both visible and hidden costs of HWC for members of park communities and support a call for increased gender-sensitivity in HWC research.

## **Keywords**

human-wildlife conflict, gender, elephants, conservation, feminist political ecology, Uttarakhand (Uttaranchal), India

## **Disciplines**

Environmental Sciences | Environmental Studies | Geography | Nature and Society Relations

## **Human–wildlife conflict and gender in protected area borderlands: A case study of costs, perceptions, and vulnerabilities from Uttarakhand (Uttaranchal), India**

**Monica V. Ogra, Environmental Studies Department, Gettysburg College**

### Abstract

Human–wildlife conflict (HWC) is a growing problem for communities located at the borders of protected areas. Such conflicts commonly take place as crop-raiding events and as attack by wild animals, among other forms. This paper uses a feminist political ecology approach to examine these two problems in an agricultural village located at the border of Rajaji National Park in Uttarakhand (formerly Uttaranchal), India. Specifically, it investigates the following three questions: What are the “visible” and “hidden” costs of such conflict with wildlife? To what extent are these costs differentially borne by men and women? How do villagers perceive any such differences? Survey and interview data were collected from over 100 individuals in the study site over a period of 9 months in 2003–2004. It was found that for participants in this study, costs of HWC included decreased food security, changes to workload, decreased physical and psychological wellbeing, economic hardship, and at times an increase in illegal or dangerous activities. The research also showed that although women in the study area bore a disproportionate burden of these effects, roughly half of survey respondents perceived that men and women were equally affected. A possible explanation for this gap considers the relationships between gendered uses of space, work, status, and identity. The findings illustrate the importance of addressing both visible and hidden costs of HWC for members of park communities and support a call for increased gender-sensitivity in HWC research.

### **1. Introduction: HWC, costs, and gender**

*Danger is lurking in all directions within the forest. There are all sorts of wild animals like elephants, bears, and leopards. The main danger is from elephants. Every year there is at least one case of an elephant attack. (Field interview conducted near Rajaji National Park, January 2003)*

In countries all over the world, and particularly in zones surrounding national parks and other protected areas, borders between “human” and “wild” spaces have become blurred. Wild animals frequently leave protected areas and enter nearby human settlements, and members of forest-dependent villages may enter protected areas where they come into close proximity with wildlife. The resulting human–wildlife conflict (HWC) – e.g., crop damage, live- stock predation, property damage, and attack of humans – often undermines local support for conservation. Such lack of support is evidenced by damage inflicted upon wild- life by humans,

including habitat degradation or “retaliation” killings in which waterholes, crops, or baited carcasses are deliberately poisoned (Bagchi and Mishra, 2006; Sifuna, 2005). In an extreme case from 2001, for example, angered residents in northeast India (Assam) selectively targeted their paddy fields with poison for crop-raiding elephants; a mutilated elephant carcass was subsequently discovered in the field with the words, “Paddy Thief Bin Laden” scrawled upon its body (WTI, 2007; Sethi, 2003).

Since at least the mid-1990s geographers and other social scientists have made significant contributions to an interdisciplinary literature examining the problem of HWC (e.g., Brandon et al., 1998; Terborgh et al., 2002; Woodroffe et al., 2005; c.f., Naughton et al., 1999; Distefano, 2003). Taken together, this body of research has been particularly important in a number of ways: (a) it has established methods and frameworks to quantify the extent, frequency, and temporality of HWC; (b) it has highlighted the major cultural and political challenges of mitigating HWC; (c) it has emphasized the direct causes, immediate impacts, and economic costs of HWC; and (d) it has demonstrated the ways in which poor and politically marginalized people may be disproportionately negatively affected by these costs.

At least two large gaps remain in the literature. First, while the visible costs (i.e., direct economic losses) of HWC have often been quantified,<sup>1</sup> other “hidden” costs are often not fully examined. I define hidden costs as those characterized by one or more of the following traits: (a) uncompensated, (b) temporally delayed, or (c) psychological or social in nature. In the literature, hidden costs go by many names. For example, in their discussion of women’s interactions with wildlife in Africa, Hunter et al. (1990) mention the “secondary impacts” of wildlife utilization activities incurred by women, such as the increased fuel demand and attendant workload required to process game meat. Hoare (1999, p. 700) observes that “economic assessments exclude many of the social ‘opportunity costs’ associated with living with elephants” such as loss of sleep and disrupted school attendance (see also Hoare, 2000). In a recent review of impacts of HWC on human lives and livelihoods, Thirgood et al. (2005, p. 13) note the relative lack of research about both the economic “opportunity costs” (i.e., income that would have been earned if the presence of wildlife did not preclude particular activities) and more broadly defined “indirect costs” (i.e., time and money spent in preventing wildlife damage) incurred by local communities. Similarly, the 2003 World Parks Congress recommended that conflict mitigation approaches must address the “social” issues associated with HWC in addition to economic and ecological ones (IUCN, 2003). While many scholars call for increased study of “hidden costs,” no substantive collection of work within the HWC literature has been explicitly done this.

---

<sup>1</sup> For example, in Naughton et al.’s (1999) study of crop raiding by elephants in 16 African countries, the authors find that farmers’ average losses ranged from as little as 0.2% to as much as 61% of the affected crops. Nyhus et al. (2005) report that a single NGO in Pakistan spends approximately \$2000 compensating herders for livestock losses caused by snow leopards. In India, Asian elephants are reported to be responsible for 100–200 human deaths annually (Thirgood et al., 2005).

A second gap within the HWC literature is that gendered aspects of conflict have not been identified or examined adequately. While it is by now well-known that women are often the primary users of forested areas (Dankelman and Davidson, 1988; Shiva, 1989; Agarwal, 1992; Badola and Hussain, 2003), only a handful of studies, primarily conducted in Africa, mention the issue of gender in shaping attitudes towards wildlife and vulnerability to wildlife-related problems (e.g., Hunter et al., 1990; Naughton-Treves, 1997; Nabane and Matzke, 1997; Hill, 1998; Kuriyan, 2002; Bauer, 2003). Moreover, although researchers have demonstrated that vulnerabilities to environmental hazards more broadly defined are strongly shaped by cultural and socioeconomic factors including both class and gender (Liverman, 1990; Dow, 1992; Cutter, 1996; Hewitt, 1997; Enarson and Morrow, 1998; Wisner et al., 2004), few if any detailed studies of the gender–HWC relationship have been published. Thus although women and men in forest-dependent areas tend to use and interact with the environment in gender-specific ways, researchers’ understanding of the causes and consequences of conflict with wildlife remains incomplete.

### *1.1. Theoretical approaches*

A gender-based approach to problems associated with HWC has the potential to contribute to both of these empirical gaps. This paper argues that hidden costs of HWC often go unnoticed in part *because* they are gendered. To illustrate this point, I employ a framework for analyzing both the visible and hidden costs of HWC by drawing on critical theories of the household and recent work in feminist political ecology.

Feminist researchers interested in understanding problems faced by rural communities have long argued that the study of dynamics within the household can yield important insights about differential control over resources, power hierarchies, and relationships between men and women (e.g., Boserup, 1970; Sen, 1981; Agarwal, 1987; Folbre, 1988; Dwyer and Bruce, 1988; Hart, 1992). This body of research has illustrated that the household is itself a complex site in which distributed resources include power and status. More recently, feminist political ecologists have also helped to reconceptualize meanings of the household by casting the physical environment as a component part of it, casting the “environment” as at once a source of physical assets as well as cultural, economic, and even domestic spaces (e.g., Leach, 1992; Braidotti et al., 1994; Rocheleau et al., 1996; Fortmann, 1996; Carney, 1996; Jarosz, 1997; Pearson and Jackson, 1998; see also Bebbington, 1999).

From a feminist political ecology perspective, questions about how gender shapes access to, control over, and knowledge about the environment are central. Feminist political ecology approaches build on earlier work in political ecology (e.g., Blaikie and Brookfield, 1987; Peet and Watts, 1996) by situating gender – a social structure which cuts across and interacts with divisions of class, ethnicity, race, and other social markers – as the central analytical category. Furthermore, a feminist political ecology approach often emphasizes the gendered use of space (Rocheleau et al., 1996). Wisner et al.’s (2004) model for analyzing vulnerability to natural

disasters illustrates the relevance of this concept by posing the critical question, “Who was where, when?” One might well rephrase this query to be even more specific and ask, “Who was where, when, *and why?*”

In this study, a novel approach drawing on the insights of both feminist political ecology and critiques of the household will be used to examine the costs of HWC. In particular, the study will focus on how hidden and visible costs relate to gender-based relationships within and between households, to gender-based divisions of labor, and to gendered uses of space. Unlike previous studies, this paper focuses on the implications of HWC for individuals *within* the household as well as for the household as a whole. The discussion focuses on results from a case study of Bhalalogpur,<sup>2</sup> a village located near Rajaji National Park in Uttarakhand, India. The research questions are as follows: (1) What are the visible and hidden costs of conflict with wildlife? (2) To what extent are these costs differentially borne by men and women? and (3) How do villagers perceive any such differences? Answers to these questions will facilitate deeper insight into the conditions structuring gender–environment relationships, and will help to illuminate the nature of inequities associated with wildlife conservation.

## 2. Study area

### 2.1. HWC in Uttarakhand, India

This study is situated in the Garhwal region of the Himalayan state of Uttarakhand, India (the state known as “Uttaranchal” until 2006). This region is perhaps most well-known for its association with the famous “Chipko” movement of the 1970s, in which forest-dependent women successfully protested commercial timber operations through nonviolent actions (Shiva, 1989; Guha, 1989; see also Mawdsley, 1998; Rangan, 1996). More recently, the forests of Garhwal have been gaining recognition for their importance in providing critical habitat for rare and endangered species, including the Asian elephant (*Elephas maximus*), tiger (*Panthera tigris*), and leopard (*Panthera pardus*) (Johnsingh et al., 2002; Williams, 2002; Johnsingh and Negi, 2003). Such charismatic megafauna and their habitats are protected in the region through a network of national parks and wildlife sanctuaries, notably Rajaji and Corbett National Parks.

In the communities surrounding Uttarakhand’s protected areas, hundreds of HWC incidents occur annually, including livestock predation by leopards and tigers, and crop raiding by wild boars, elephants, and various ungulates (Badola, 1998; Johnsingh et al., 2002; Bhardwaj et al., 2002; Johnsingh and Negi, 2003). While these forms of HWC are the most common, the most serious is death and injury from elephant and leopard attacks. One study documents 18 cases in which people were attacked by elephants, tigers, bears, and leopards between 1994 and 1999 in and around Corbett National Park (GOI, 2001). Another study reports that 11 people

---

<sup>2</sup> A pseudonym. Details which could reveal the location of the village have intentionally been omitted.

were injured by elephants near Rajaji National Park from 1993–1999 (Williams, 2002). From 1982–1993, 85 people were killed by elephants in the corridor between the two parks (Badola, 1997). Leopard attacks in the Pauri district of Uttarakhand alone were reported to be the cause of death for over 140 people in the years 1998–2000 (NBSAP, 2002). An Indian newspaper article in 2004 also reported that over 100 people in the state had been killed by leopards since 2000 (Prashant, 2004).

Reports of wildlife-related deaths in Uttarakhand have begun to note the disproportionate numbers of female and young (<15 years of age) victims: 66% and 68% of the leopard victims respectively, in the Pauri cases mentioned above (NBSAP, 2002; Prashant, 2004). Studies of HWC elsewhere in north India suggest that vulnerability to attack by wildlife may be influenced by such factors as gender, age, and relative poverty of individuals (Jhala, 2002; Rajpurohit and Krausman, 2000).

## 2.2. *Bhalalogpur village*

This study was conducted in Bhalalogpur, a village within the Rajaji-Corbett National Parks corridor of Uttarakhand, India. As a traditional migration route for elephants between these PAs, the corridor holds considerable conservation value. Villages located in this corridor are elements of an increasingly fragmented land-use mosaic that includes not only protected areas, but roads, rail lines, a hydropower dam, and other infrastructure projects (Badola, 1998; Bhardwaj et al., 2002; Johnsingh et al., 2002). There are over 100 villages within a 5 km radius of the park, many of which are dependent upon nearby forest resources such as fuelwood, fodder, grazing land, thatch grass, medicinal plants, fruits, building materials, etc. (Badola, 1997; Chandola, 2001).<sup>3</sup> Many of these villages, including Bhalalogpur, predate the notification of RNP in 1983 and residents continue to illegally rely on park resources.

Bhalalogpur shares a border with Rajaji National Park (RNP) on three sides. Approximately 36 ha in size, it consists mainly of contiguous agricultural fields that abut RNP and pathways that follow the forested border or the intra-village network of *kuls* (traditional irrigation ditches). *Kul* water is drawn from a natural source in RNP and is also stored in a cement water tank at the park boundary; the tank is then connected to a number of private and community taps around the village. Adjacent to the village temple lies a primary school, tea stall, small ration shop, and doctor's office. Other amenities such as a hospital, college, and urban markets are located approximately 10 km away. Transportation to and from the site during the monsoon is extremely limited due to flash floods and swollen rivers.

Bhalalogpur has a participant-reported population of approximately 650 full-time residents, many of whom are related. Mean household size is 6.3 persons. All villagers are Hindu, share claim to a common ancestral village in the high mountains of Garhwal, and self-identify as *pahari* (literally, 'of the mountains'). Landholdings are typically small; the vast

---

<sup>3</sup> To the best of my knowledge, residents of the study site do not hunt or collect wood for sale from RNP.

majority of villagers (96%) possess less than 1 ha; mean landholding size is 0.4 ha (possessed by 69%). Most households do, however, possess at least one cow or bull (94%). Due to the small size of landholdings, families rely upon remittances and wages from male members to supplement their incomes and diets.<sup>4</sup> Male out-migration is common and results in many female-headed households. Cash-cropping is virtually non-existent with the exception of a few families who are experimenting with floriculture and the two large landowners who sell grains within the village. Instead, farmers concentrate their efforts on growing traditional varieties of crops (such as wheat, rice, corn, local grains), and maintaining small vegetable gardens. Farmers I interviewed appeared resistant to adopting new crops, relied on few if any chemical inputs, and generally employed the use of draft animals in agriculture. Two wealthy families own a mill and tractor, which are periodically loaned out to villagers.

Men and women in the study area adhere to traditional gender roles that place women at the center of the agricultural system (e.g., as described in Pokhriyal, 1994). Women are typically involved with agricultural and domestic duties including care of livestock, children, and elders, and collection of water, fuelwood, fodder, and other minor forest products (e.g., medicinal plants, thatch grass for roofing, wild fruits, etc.). Groups of women visit the forest frequently as part of these duties, both for economic as well as for social reasons. I observed that even women of relatively prosperous households draw from the nearby forests for “free” supplemental fuel and fodder resources. In contrast, the men of Bhalalogpur are expected to earn wages and participate in the cash economy. They do not go into the forest on a routine basis, but occasionally collect poles for construction timber. These gender-based divisions of labor are characteristic of patterns elsewhere in the region (e.g., as described in studies by Mehta, 1996; Badola, 1997; Chandola, 2001; Badola and Hussain, 2003), and serve to help residents of Bhalalogpur to maintain a traditional *pahari* identity.

### 3. Methods

To address the three research questions, I conducted village-based fieldwork over a 9 month period in 2003–2004. Data collection involved both qualitative and quantitative approaches, including participant-observation, use of key informants, in-depth interviewing, small group interviews, structured survey administration, and village mapping. I also carried out a village census, as reliable and scale-appropriate government data were not available at the time of the study.

---

<sup>4</sup> Sources of income include government salaries or related retirement pensions, regular employment in the closest town (most commonly as a driver), daily wage-labor earnings, and remittances associated with out-migration to Delhi. Some households also sell milk within the village, when possible.

With the help of native Hindi- and Garhwali-speaking research assistants,<sup>5</sup> I conducted over 100 open-ended and survey-based interviews about HWC. The surveys were used to quantify and describe villagers' perceptions of the frequency, intensity, location, and nature of HWC at village, household, and individual levels. Among other topics, respondents were asked to describe: problems associated with crop-raiding, problems associated with attack by wild animals, and their perceptions about how such problems affect women and men in the family. Although respondents often could not recall the exact time, date, and location of incidents, they reported the general time (e.g., wet/dry sea-son) and place (e.g., village or forest). We also collected some demographic data for each respondent (e.g., age, literacy status, education level, number of household members, landholding size, and occupations of any wage earners, among other items). Out of respect for respondents' privacy, I did not ask for sensitive information such as household income or caste marker.

In the first portion of the fieldwork stage, I interviewed key informants and employed snowball and door-to-door sampling approaches to identify 30 study participants. These interviews typically lasted 1–2 h and helped to establish the nature of the conflict and range of perceived wild-life-related problems in the village. The results from this set of interviews were used to develop the codes and questions for a standardized survey. After pre-testing the survey, I used a door-to-door approach to select survey respondents from families that had not yet been included in the study. Key informants helped me to construct a detailed map of the village which I used in an attempt to include residents from every household. I adopted the definition of "house-hold" employed by the Census of India, i.e., "a group of persons who normally live together and take their meals from a common kitchen" (GOI, 2007).

To encourage participation amongst all households, we visited each physical dwelling to explain the project and invite a member's participation. We asked to speak with either a male or female member of the household on an alternating basis. If we suspected or learned from the interview that multiple households existed within a single dwelling, we returned on a different day to attempt to complete an additional survey. Due to male out-migration, it was not possible to find an equal number of men available to participate without returning to households that had already been approached. In all, we administered 70 surveys (40 women and 30 men).

Interviews yielded both quantitative and qualitative results. Quantitative data include summary statistics of the survey-based questions disaggregated by gender, land-holding size, and household size (Tables 2–5). As shown in Table 1, I focused on the upper and lower ranges of landholding and household size, classifying "small landholders" as those from households in the bottom third in terms of plot size (<0.125 ha), while "large landholders" were drawn from households in the top third (>0.35 ha). Similarly, respondents from "small households" are from those in the bottom third in terms of the number of family members (<5 members), while "large

---

<sup>5</sup> Interviews were conducted in one or both languages, as participants preferred.

households” are in the top third (>6 members). Landholding size and household size were not significantly correlated at the  $P < .05$  level.

Qualitative results were compiled as follows: First, each interview was assigned a unique alphabetic-numeric code which identified the gender of the interviewee and type of interview (key informant, in-depth, or survey-based). I then hand-coded each interview transcript and associated set of notes, creating a master list of key and recurrent themes as part of an indexed text-based dataset (e.g., as described in Denizen and Lincoln, 2000; LeCompte and Schensul, 1999). In this way, I was able to categorize clusters of specific types of responses to general questions about HWC and easily locate representative narrative text for specific survey questions. I interpreted the two sets of data in tandem, in particular employing qualitative interview data to help explain quantitative results of the survey analysis. Using the operational definition for hidden costs presented earlier in the paper (i.e., those characterized by one or more of the following traits: uncompensated, temporally delayed, or psychological or nonmaterial in nature), I classified the results as either “visible” or “hidden” and interpreted the findings. The results of this process are detailed below.

Table 1  
Respondent population classifications

Household size class	Number of members	Frequency	Percent	
<i>Household size classification</i>				
Small	0-4	13	18.6	
Medium	5-6	30	42.9	
Large	>7	26	37.1	
No data		1	1.4	
Landholding size class	Bighas <sup>a</sup>	Hectares	Frequency	Percent <sup>b</sup>
<i>Landholding size classification</i>				
Small	0-2.5	0-0.125 ha	23	32.9
Medium	2.6-6.5	0.13-0.325 ha	22	31.4
Large	>7	>0.35 ha	23	32.9
No data			2	2.9

<sup>a</sup> 1 bigha = 500 m<sup>2</sup>.  
<sup>b</sup> Total percentage exceeds 100 due to rounding.

The following discussion of visible and hidden costs presents findings drawn from both the quantitative and qualitative data sets, and includes a number of direct quotations from study participants. Shorter quotations used in the first part of the discussion help to illustrate my interpretations of data about perceptions of crop-raiding, while lengthy quotations relate primarily to problems of attack by elephants and about gendered vulnerabilities to HWC. These longer quotations help to give a voice to members of a community that is otherwise relatively silent on these issues, and reflect participants’ expressed desires to have their accounts documented. Quotations were selected for representativeness and clarity.

## 4. Results

### 4.1. Visible costs of crop-raiding by elephants

Participants reported uncompensated “visible” costs including loss of crops, damage to fields, and various other forms of property damage such as broken fencing or water pipes. A variety of protected animals, including elephant, wild boar, and various ungulate and avian species, were reported to routinely move across the invisible park boundaries in search of food, which they find in abundance in the fields of Bhalalogpur. Crops eaten by elephants included food grains (wheat, rice, and a highly nutritious local grain called *madhua*), bananas and fruit of other trees, and bar- sim, a variety of long-grass planted as fodder for stall-fed cattle. Participants reported that elephants caused damage to both young and mature crops. Elephants were also reported to come to the village in search of water in the hot summer months when water sources in the forest dry up. During my fieldwork I observed evidence of elephant entry into the village during both the *kharif* (wet/monsoon) and *rabi* (dry/winter) growing seasons.

Irrespective of gender, landholding size, or household size, the majority of survey respondents (77%) reported that crop-raiding activity is a “severe” problem for their households (Table 2). Those who found that it was “not a problem” (6 respondents, 4 of which were men, and none of whom were large landholders or members of large households) or that it was a “moderate” problem (10 respondents, drawn from all sub-categories) said that they could not collect reliable quantitative data assessing actual crop loss values, respondents’ reported estimates of average seasonal losses due to crop-raiding ranged from 20% to 50% of the anticipated yield, and underscore the hardship crop-raiding poses for land-poor families in particular.

Most respondents (88%) also agreed that crop loss to wild animals, particularly from elephants, is a “severe” problem for the village as a whole; no respondent said that it was “not a problem” (Table 2). As with perceptions about crop loss impacts at the household-level, men and women of both small and large households and from households with both small and large landholding sizes agreed on this point. The data further indicate that of those most concerned about crop-raiding, men (93.1%), small landholders (95.5%) and members of large households (96%) are represented in the greatest proportions. However, due to the small number of responses in the subcategories these trends should be interpreted with caution.

Table 2  
Respondent ranking of crop-raiding severity at household and village levels

Valid % (Count)	Not a problem	Moderate (affects somewhat)	Severe (affects to a great extent)	Do not know/no data
Responses to the question, "How severe of a problem is crop-raiding for your family?"				
Total (n= 70)	8.6 (6)	14.3 (10)	77.1 (54)	0 (0.0)
Men (n= 30)	13.3 (4)	13.3 (4)	73.3 (22)	0 (0.0)
Women (n= 40)	5.0 (2)	15.0 (6)	80.0 (32)	0 (0.0)
Small landholders (n= 23)	8.7 (2)	17.3 (4)	73.9 (17)	0 (0.0)
Large landholders (n= 23)	0.0 (0)	13.0 (3)	87.0 (20)	0 (0.0)
Small households (n= 13)	7.6 (1)	15.4 (2)	76.9 (10)	0 (0.0)
Large households (n= 26)	0.0 (0)	23.1 (6)	76.9 (20)	0 (0.0)
Responses to the question, " How severe of a problem is crop-raiding for the village as a whole?"				
Total (n= 68)	0.0 (0)	4.3 (3)	88.2 (60)	7.1 (5)
Men (n= 29)	0.0 (0)	6.9 (2)	93.1 (27)	0.0 (0)
Women (n= 39)	0.0 (0)	2.6 (1)	84.6 (33)	12.8 (5)
Small landholders (n= 22)	0.0 (0)	4.5 (1)	95.5 (21)	0.0 (0)
Large landholders (n= 22)	0.0 (0)	9.0 (2)	81.9 (18)	9.0 (2)
Small households (n= 12)	0.0 (0)	8.3 (1)	83.3 (10)	8.3 (1)
Large households (n= 25)	0.0 (0)	0.0 (0)	96.0 (24)	4.0 (1)

Taken together, these data suggest that crop-raiding is perceived to be a more serious problem at the village level than at the household level by members of all respondent subcategories (as shown in Table 2). This is likely due, in part, to the fact that once an elephant enters the village, its movements are unrestricted. Due to a contiguous spatial arrangement of village landholdings, lack of intra-village fencing, and proximity to the park boundary, both large and small landowning families share potential vulnerability. With only raised bunds or irrigation ditches demarcating divisions between landholdings, elephants tend to cause damage across many households' fields during any given event. I observed such damage during elephant raids on consecutive rainy nights during my fieldwork.

The most immediate result of crop-raiding behavior, whether due to consumption or damage, is loss of food. Indeed, 98% of survey respondents complained that crop-raiding by wild animals negatively affected the overall food supply in their household. One reason for this may relate to the distribution of grain within the village. Although individual families tend not to be self-sufficient in grains, surplus from larger landowning families remains within the village. Thus, if the largest farmers suffer deeply, so too may the smaller ones. In the absence of adequate preventative or responsive measures (e.g., compensation, insurance, or reserve granaries), crop-raiding can result in not only reduced overall food security but also other hidden costs.

#### 4.2. *Hidden costs of crop-raiding by elephants*

Crop-raiding events often led to a series of hidden costs for villagers in the study. Such costs include increased workloads and diminished physical wellbeing, especially for women. The examples that follow are all drawn from study participants' reported descriptions of their experiences with HWC.

A commonly overlooked set of outcomes associated with crop-raiding involves an increased workload for both men and women. This increased workload often puts people at physical risk; several examples illustrate this relationship. First, some study participants reported that when food supplies are reduced due to crop-raiding, men face increasing pressure

to leave the village in search of work; women removed or replanted damaged crops. These activities place women at greater risk of heat exhaustion and exposure to insect-borne disease than their male counter- parts. Secondly, there is an increased workload associated with repairing fences damaged by elephants (used primarily to prevent livestock from leaving the village). For example, one pair of related women whom I interviewed reported that it takes up to two days for their family members to complete the repairs. I observed that women illegally acquired poles from the forest to replace the broken ones, while men completed the actual repairs. Yet when women make extra trips to the forest, they risk encountering wild animals and forest guards. As one respondent said, “In the forest there is also danger of the *two-legged* animal” – a reference to villagers’ fear of humiliation, molestation, or arrest at the hands of forest guards.<sup>6</sup> One woman, for example, related her feelings of powerlessness and anger in the face of harassment by forest guards as she recalled, “Earlier they would snatch our sickles and gathered fodder, and just throw them into the canal.”

Table 3  
Who guards?

Responses to the question, “Who guards?”					
Valid % (Count) <sup>a</sup>	Male adult	Female adult	Any adult	Any HH member	Other <sup>b</sup>
Total (n= 44)	27.3 (12)	31.8 (14)	25 (11)	11.4 (5)	2.9 (2)
Small landholders (n= 12)	33.3 (4)	41.7 (5)	25.0 (3)	0.0 (0)	0.0 (0)
Large landholders (n= 18)	27.8 (5)	27.8 (5)	27.8 (5)	11.1 (2)	5.6 (1)
Small households (n= 9)	33.3 (3)	22.2 (2)	22.2 (2)	11.1 (1)	11.1 (1)
Large households (n= 18)	33.3 (6)	27.8 (5)	33.3 (6)	5.6 (1)	0.0 (0)

<sup>a</sup> Count includes only those survey respondents that responded in the affirmative when asked if guarding of crops was among the primary crop protection strategies employed by the household.

<sup>b</sup> Neighbor.

Third, study participants complained that when elephants damage pipes leading to the village in the summer months, women must fetch drinking water from a hydro- electric canal until pipes are repaired by the village’s Irrigation Department employee. Participants said that women occasionally fall into the fast moving water when collecting water in this manner and in at least one case a woman drowned.

Fourth, 63% of survey respondents said that a household member guards their fields at night following crop-raiding in the village. While open-ended interviews indicated that night-guarding is typically considered to be “men’s work,” survey data revealed that in actuality women also participate in this activity. When asked who guards, 27% reported that men guard, 32% reported that a female guards, and 25% reported that “any available adult” guards (Table 3). These data suggest that women are equally likely to be involved in guarding activities and bear the attendant physical risks. Analysis of these data show that female guards occur in all household size and landholding size classes, but in comparison to male guards are most strongly associated with small landholding size (5 out of 12 cases). Male smallholders’ need to support their households with cash income (often through out- migration) may help to explain small

<sup>6</sup> I should note, in addition, that male Forest Department staff members sometimes avoid confronting women in the forest out of fear of being unjustly accused of molestation (see Agarwal, 2001 who has documented this problem across India).

landholders' reliance on female labor for night guarding, although interpretation of results from this small sample is necessarily tentative. In each of these four examples, crop-raiding resulted in an increased workload for both men and women, but in many cases the work undertaken by women is more physically demanding, risky, and at times illegal.

In addition to increased workload and physical risk, women in seriously affected households also experience diminished physical wellbeing. As mentioned above, nearly all survey respondents stated that loss of grain crops negatively affects the amount of food resources available to the household as a whole. Such loss may have important implications for women in particular, due to their traditional positions in the family as caregivers and food providers. During my fieldwork I observed that when food is prepared for a household, the order for distribution is such that the women who have prepared the meal will serve others first and privately consume the remaining food only after others have finished. In this context, women often make sacrifices for the sake of other household members, particularly young and male members. Individual interviews confirmed that under conditions of relative food shortage this pattern of distribution does negatively affect women. Water is added to the remaining *dal* (cooked lentils) and *sabzi* (vegetable) preparations and eaten with rice to “stretch” the food supply at the end of the meal. As one woman explained it to me, “Women just do the adjustment. . . This happens and is very normal in the family.” In times of severe shortage, both men and women will be forced to eat less but as one participant noted, “a mother does make a sacrifice on her part to suffice her children’s diet.” Such sacrifices reflect a broader set of Indian values which encourage women’s individual and collective sacrifices for the well-being of the family.<sup>7</sup>

Taken together, these results suggest that women in Bhalalogpur (and in particular, poor women) disproportionately carry the burden of the indirect effects of HWC, including increased workloads, decreased food resources, and decreased physical well-being.

#### 4.3. *Visible costs of attack by elephants*

Study participants reported that attacks by elephants occur in both the village fields and in the park. According to participants’ accounts, in the four years prior to the study, two villagers died, two were seriously injured, and at least 10 other villagers encountered elephants but were not injured or sustained minor injuries. The most visible consequences of attacks reported by study participants include death and injury. All respondents agreed that elephant attacks are a problem for villagers, though perception of frequency varied across sub-categories. (Table 4).

---

<sup>7</sup> As with women’s nutrition, their health-care status reflects an ethos of self-sacrifice and self-neglect. My interviews with the village doctor indicated that heat- and diet-related variables are key factors in explaining why female villagers routinely suffer from untreated fevers and malnutrition

Table 4  
Respondent perception of frequency of attack by elephants

% (Count)	This is not a problem	Sometimes (once every few years)	Often (once a year or more frequently)
Responses to the question, "How frequently are people from the village attacked by elephants?"			
Total (n= 70)	0.0 (0)	88.6 (62)	11.4 (8)
Men (n= 30)	0.0 (0)	86.7 (26)	13.3 (4)
Women (n= 40)	0.0 (0)	90.0 (36)	10.0 (4)
Small landholders (n= 23)	0.0 (0)	95.7 (22)	4.3 (1)
Large landholders (n= 23)	0.0 (0)	82.6 (19)	17.4 (4)
Small households (n= 12)	0.0 (0)	69.2 (9)	30.8 (4)
Large households (n= 25)	0.0 (0)	92.3 (24)	7.7 (2)

During my fieldwork, I repeatedly heard narratives about a number of serious incidents of human–elephant conflict that had occurred within the past 4 years. In one case, a young mother was attacked while she collected forest products and was dismembered. In a second case, a young man was attacked in the village while guarding crops. He survived but was hospitalized. Describing a third case, a study participant related the following story:

See – [showing her leg] – the elephant has broken my leg. Four years back. We were bringing wood from the forest. The elephant was standing at the turn, and I screamed on seeing it. I ran, and he came after me... Then I fell on the ground and he kicked me and went.

In a fourth case, a woman died on her first trip to the forest. In her mother's words:

The others who had gone with us to the forest were all in a panic when they witnessed a tree that had been uprooted by an elephant. They said to be careful because there must be an elephant nearby. They were right... The elephant raised its trunk to get the bundle of fodder which I was carrying. I immediately threw the bundle behind and made a narrow escape. The elephant went across the road and my daughter was coming from behind with the others. You know something? That was the first day my daughter had gone to the forest. She had never been to the forest earlier. The elephant broke her hand... and then killed her. [To which another woman present replied: "Oh God! Death must have taken her to the forest that day."]

Despite these women's specialized knowledge of the forest and awareness of conditions that signal danger, they continue to occupy such hazardous sites. Here, the mother's friend attributes the accident to forces of destiny or fate, with death as the principal responsible actor, rather than to the material (e.g., economic) or cultural (e.g., gender- based) conditions that placed the women in the forest to begin with. Women frequently employed such explanations. As one

woman reminded me, “One may die sitting at home! These are only excuses. Death may come in any way.” In this context, visible costs may remain hidden from even those directly involved.

#### 4.4. *Hidden costs of attack by elephants*

Hidden costs of elephant attack include fear, economic hardship and/or increased workload. Over 90% of respondents said that they feel afraid when they leave the village boundaries and enter the forest. However, as described previously, women are far more likely to do so. One older woman said:

I don't go to the forest anymore so they say that I am scared! So what? I don't deny that I am scared... I am really very scared.

At the same time, young women and those with high levels of park dependence felt that they had little control, illustrating one way in which gender interacts with age and wealth, for example, to compound risk for those without a range of options:

When we go to the forest it is all fear for us, but we have no choice... We have to go.

Participants also described economic hardship or increased workload as indirect effects of attack by elephants. For example, in the excerpt below, a retired forest guard from the village describes the medical costs that resulted from an attack:

The elephant came from somewhere in-between from the fields. My son came home and he made a fire torch and tried to shoo away the elephant. We told him not to go but he did not listen. The elephant caught hold of the fire torch and threw it and kicked my son.. .People from the Forest Department came and many rounds of blanks were fired, but still it did not move from there.. .The elephant made my son's condition very serious by kicking him. My son was bedridden for three months. . . God saved his life. He is OK now, but there is still some problem with his walking... I have bills of 32,000 rupees<sup>8</sup> that were spent on him.

Injury of a household member has important implications for the distribution of household labor, particularly if a woman is injured. In another incident, a woman in my host family fell out of a tree while collecting fodder and seriously injured her back. Female members of the immediate and extended family struggled to redistribute her workload amongst themselves. Medical bills strained cash resources that were being saved for the family's teenage daughter's education and marriage expenses. The girl's schoolwork suffered as her domestic responsibilities increased. Family members were consumed with worry. Neighbors helped out by sharing fuelwood and fodder, and the generosity of friends and relatives and remittances from other children helped the family to absorb these impacts. In this case, large family size was an asset. While this accident was not caused by HWC, it could easily have been. Women routinely climb tall trees to avoid confrontation with elephants.

---

<sup>8</sup> 32,000 Indian Rupees was equivalent to approximately \$640 in 2003–2004, the years in which fieldwork was conducted (USD 1 = INR 50). Average annual household income in a RNP area village comparable to Bhalalopur was 56,000 rupees (\$1,120 US) according to 2001 estimates (reported in Chandola, 2001).

Elephant encounters may also result in economic loss even when no one is killed or injured. For example, women who encounter elephants during fuelwood/fodder collection may be forced to abandon their bundles and return to the village. In such cases, a gender/class distinction reveals itself, illustrated below as experienced by two women, “Badi” and “Didi.” While Badi comes from a household which can afford to purchase fuelwood, has enough land to grow crops with supplemental fodder value, and requires her only to visit the forest for fodder collection, her functionally landless neighbor and friend (Didi) has no choice but to return to the site of the encounter, placing herself at increased risk:

Today the women of the house encountered an elephant in the forest. They were all very scared and ran away, and all of them abandoned their whole day’s worth of wood and fodder. Badi lost one of her *chappals* [shoes] while running from the site – she had been up in a tree! When they came home there was so much commotion. The women said that it was an area they go to all the time, but that this was the first time they had seen an elephant there. They heard its voluminous sound and RAN! They came home absolutely terrified. Badi couldn’t talk at all – She was still so shaken up by the whole thing. There was a mix of fear and jokes in the post-encounter atmosphere here, perhaps to break the tension so that things could go “back to normal” and work would continue... Didi showed up later and teasingly said, “Come on, let’s go back and get your *chappal*.” Badi refused, figuring that the elephant would have already eaten the fodder she had collected. Didi, however, still plans to go back for her wood bundle. (field notes)

## 5. Perceptions of vulnerability to HWC

In the previous sections I have argued for the importance of acknowledging both the visible and hidden costs associated with HWC, and showed that women bear a disproportionate burden of the hidden costs. While I believe that the evidence for these claims is compelling, participants were fairly evenly split as to whether women bear a disproportionate burden. When asked, “Are women or men more affected by HWC, or is it the same?” 50% of survey respondents said that women are more affected while 43.5% said that men and women are equally affected. The overall response trend to this question did not vary much by gender, landholding size, or household size (Table 5).

Table 5  
Perceived distribution of direct/indirect impacts of HWC for men and women

Valid % (Count)	Men are more affected	Women are more affected	Men and women are equally affected	Do not know
Responses to the question, "Are women or men more affected by HWC, or is it the same?"				
Total (n = 69)	4.3 (3)	50.1 (35)	43.6 (30)	1.4 (1)
Men (n = 30)	6.7 (2)	50.0 (15)	43.3 (13)	0.0 (0)
Women (n = 39)	2.6 (1)	51.3 (20)	43.6 (17)	2.6 (1)
Small landholders (n = 23)	8.7 (2)	56.5 (13)	34.8 (8)	0.0 (0)
Large landholders (n = 23)	4.3 (1)	52.2 (12)	43.5 (10)	0.0 (0)
Small households (n = 13)	7.7 (1)	61.5 (8)	30.8 (4)	0.0 (0)
Large households (n = 26)	3.8 (1)	53.8 (14)	42.3 (11)	0.0 (0)

Those who said that women are more affected than men commonly attributed this to the gender-based division of labor (i.e., referring to women's work in the forest) and said that women have no choice but to go. Women of smaller households expressed this position more strongly than women of other classifications, perhaps because of the relatively high importance of their forest-based contributions to the household economy. The few respondents who felt that men are more affected cited men's responsibility for replacing food grains lost to crop-raiding through purchase in the market, which in turn increases pressure for them to sell their labor. The participants who felt that the impacts were distributed equally between men and women explained that while women face risk of attacks in the forest, men face risk of attacks in the fields during the course of guarding crops. However, as previously noted, the data show that women do in fact participate in guarding activities in a number of households even though it is considered "men's" work.

When asked to elaborate on their answers, participants were often reluctant to differentiate between the effects on men and women. Some respondents suggested that HWC was a natural consequence of forest use. As one man remarked, "If people get attacked, that is the tax for use of the forest." Furthermore, participants noted that animals did not distinguish between men and women. I had the following exchange with Krishna, an unmarried 20-year-old fuelwood and fodder collector:

Question: So, do you think that the problems from wild animals that we have been talking about are more of a problem for men or for women... or is it equal?

Answer: It is equal.

Question: Why?

Answer: Because if someone comes in front of the elephant – if anybody comes in front of a wild animal – then the loss is for everybody. It is equal. He will not see whether it is a man or a woman, he will attack whosoever comes in front.

In other cases, respondents suggested that women could not be considered more vulnerable, because they had elected to enter the forest:

When people are told not to go to the forest, then why do they keep going to the forest and invite their death? If a person has to die – as it is inevitable – then death will come in whatever mode the destiny has decided. (male participant)

Here the women are going to the forest at their own will. They are aware that the elephant may kill them. Nobody is forcing them to visit the forest. They are getting killed at their own will. (female participant)

Such exchanges overlook the reality that while men rarely go to the forest at all, women – from both wealthy and poor households – enter the forest on a daily basis and derive status from such activities. For example:

Women don't let the men go to the forest.. We manage to go to the forest somehow or the other. The women here don't like their husbands to go to the forest. Every woman wants her husband to do some job and earn a living.

My husband earns but why should we spend Rs 300 each month to buy LPG [cooking gas] when I can collect the fuelwood? Besides, what would I do with my time if I did not go to the forest?

In contrast, men who guard fields do so voluntarily. One woman said that the male members of her household do not guard because it is too dangerous:

There is danger of only one thing, and from that there is danger of life. So if the elephant keeps eating then it will not budge.. then we will have to call the Forest Department people. How can one guard from it when there is danger of one's own life?

However, when I asked this woman to talk about her use of the forest, she replied that “the whole forest is dangerous” and admitted that she visited the “dense places” that most women expressly avoided out of fear of wild animals. This woman's privileging of men's safety over her own was common.

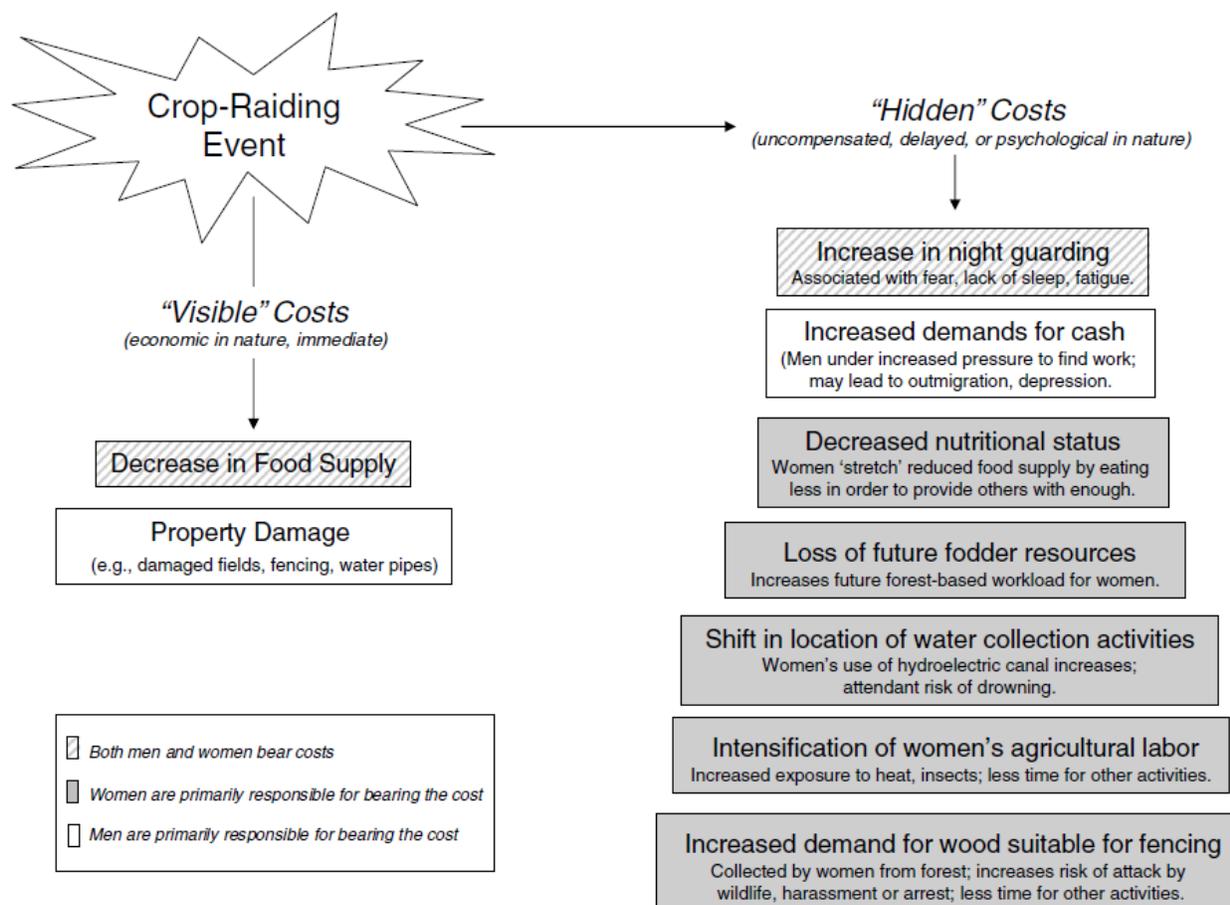


Fig. 1. Summary of visible and hidden costs of elephant crop-raiding activities.

Many men and women also insisted that costs of HWC are borne by the whole family, not by individuals. These participants believed that the burden of HWC is carried by all members of the household when a female member is affected. A male participant noted:

If the woman dies, then the man will be affected more and also the children will be affected more. Woman is the center point of the house, on which her husband, children, and all other family members are dependent.

Finally, some participants were insulted that I asked them whether men or women were more affected by HWC:

If my wife goes to forest and gets killed, then tell me, will it not be a problem for me? (male participant)

Why will you ask for such little-little things? We have a family. I go to the forest and if I get killed then it will be a problem for my children and husband. How can you ask this, that ‘men has more problem, or women has problem, or children has problem’? Problem is for everybody. (female participant)

## 6. The “invisibility” of gendered vulnerabilities

Why are women reluctant to acknowledge their disproportionate vulnerability to HWC (summarized in Figs. 1 and 2)? I suggest that part of the reason lies in the relationships between space, work, status, and identity. Societal expectations about “men’s” and “women’s” work reinforce patterns of gendered vulnerability that are tied to a gendered use of space that supersedes class. Men do not routinely go to the forest; women are obligated to do so. Women’s work includes all forms of fuelwood and water collection required for daily domestic purposes, fodder collection, agricultural tasks related to food production, child-care, eldercare, care of livestock, and food preparation. Despite the risk of attack by elephants and other animals which they face in the course of forest-based work, women take pride in fulfilling their domestic responsibilities and acquire status through these contributions to the household. They view their role as complementary to a culturally assigned male head of household, who is expected to function as the primary provider through wage earning. As documented in the previous section of the paper, women in interviews agreed that their husbands should be the primary providers of income, and they assigned a supplemental yet high value to their own contributions. And as suggested by the woman who asked what else she might do with her time were she not engaged in forest-based activities, fuelwood and fodder collection also serves a social purpose: it is time away from dominating members of the household, a break from the drudgery of housekeeping, laundry, and the cleaning of goshalas (cattle-sheds), and represents an opportunity to work alongside friends. These characteristics also cross lines of caste, class, and other social structures related to wealth.

Although women’s risky collection activities had been described as optional by some men and women, many readily pointed out that women’s contributions to the household were essential for the wellbeing of the family as a whole. From this perspective, women’s risky trips to the forest are undertaken for the sake of their families, conforming to notions that sacrifice is another important part of being a “good” Indian woman/wife/mother/daughter/daughter-in-law (e.g., as in Narayan, 2002). This also holds true for sacrifices they make in the context of the distribution of food and other household resources. Any additional work taken on as a result of HWC is seen as a normal part of their existing workload and not an excessive burden.

The “invisibility” of women’s disproportionate burden of indirect effects may also be linked to a culturally produced collective identity (e.g., as conceptualized by Ashmore et al., 2004). As reflected by participants’ difficulty in separating out the gendered aspects of indirect effects, adoption of collective identity blurs the boundaries between individuals within the group unit so that although women absorb the brunt of the negative psychological and physical consequences associated with HWC, these direct and indirect effects are perceived to be more evenly distributed than they are.

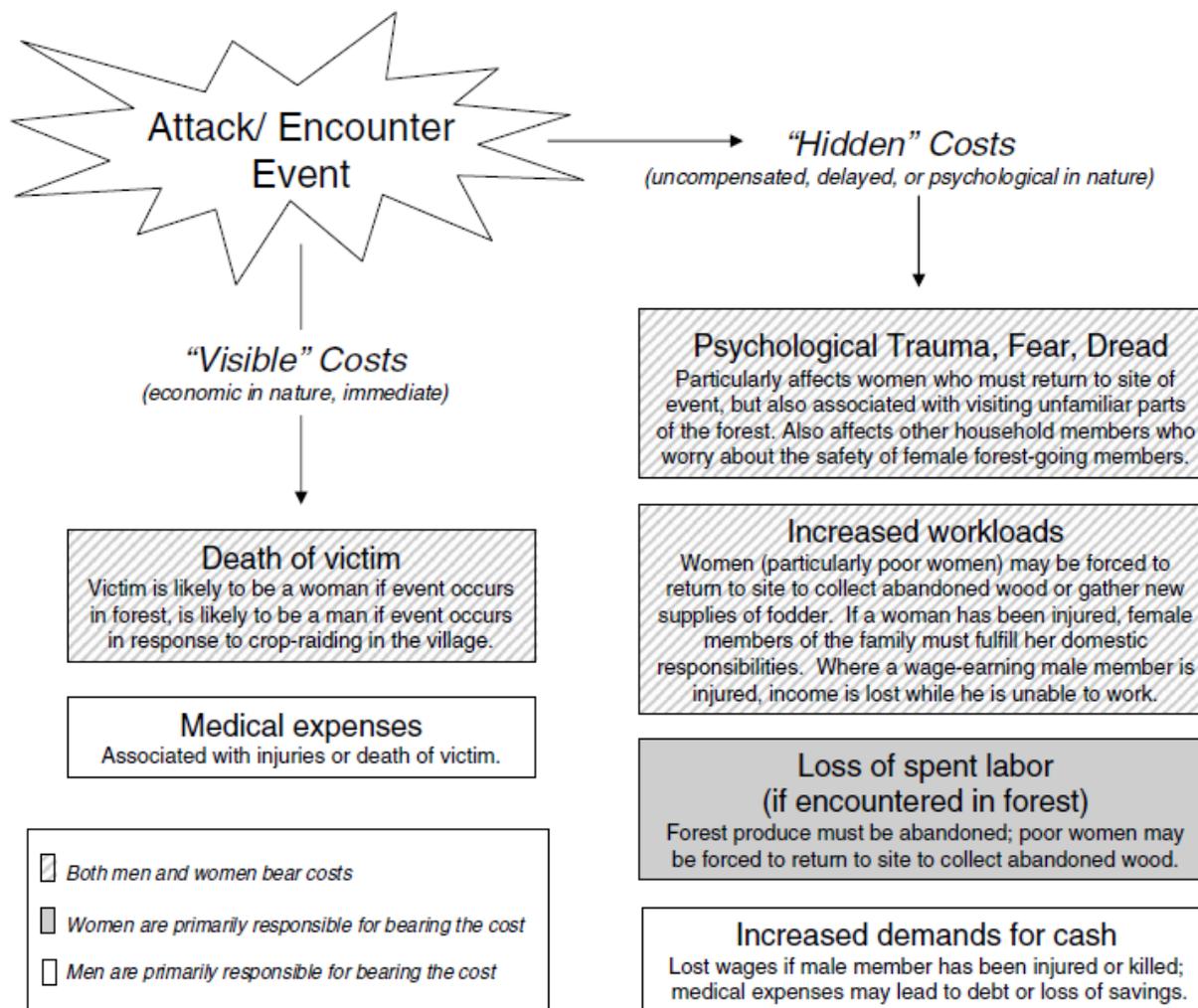


Fig. 2. Summary of visible and hidden costs of elephant attack/encounter.

Taken together, these interpretations help to explain why individuals exhibited little awareness or willingness to challenge cultural norms that, in reality, undermine women's collective well-being. They also help us to understand why both men and women instead find ways to dismiss, justify, or even defend unevenly distributed vulnerabilities associated with HWC. Lastly, they help to illustrate the ways in which gender operates as a social structure that interacts with, and at times, supersedes other markers (such as those based on wealth or age, for example) in shaping differentiated vulnerabilities to HWC.

## 7. Conclusion

This paper argues for the importance of gender in analysis of both the visible and hidden costs associated with HWC. My analysis of experiences with HWC in this village showed that across categories of gender, landholding size, and household size, HWC is perceived to be a

severe problem resulting in decreased food security, changes to work- load, decreased physical and psychological well-being, economic hardship, and at times an increase in illegal or dangerous activities. I have shown that as a group, women in the study area physically and psychologically bear the disproportionate burden of hidden costs. When asked if vulnerability to HWC is differentiated by gender, however, respondents of all sub-categories were split on the question: only 50% perceived that women bore a greater proportion of the burden. I proposed that the relative invisibility of hidden costs and associated differentiated vulnerabilities is due, in part, to the gendered division of labor and its relationship to women's status and identity in the study site.

These findings underscore the need for pointed examination of potential links between HWC and gender, both in Bhalalogpur and elsewhere. Studies employing larger sample sizes would help to support more explicitly gender- based investigations in a more clearly stratified way (e.g., along economic, age-based, religious, or cultural lines), and constitute important areas of future HWC research. It would be interesting, for example, to compare such results across agricultural versus pastoral communities in the corridor – or between Hindu and Muslim communities, where the role of gender in constructions of space varies considerably. Such studies could help to illuminate how myriad social structures contribute to shaping differentiated vulnerabilities to HWC, and would help those committed to reducing the social costs of HWC to set priorities accordingly. In addition, while I have documented that HWC occurs throughout the year (i.e., both in wet and dry seasons), further collaborations with wildlife biologists would be beneficial. Such collaboration could reveal in detail the temporal relationships between animal behaviors that contribute to conflict (e.g., *musth* in elephants<sup>9</sup>) and gendered vulnerabilities shaped by the local political economy (e.g., as related to cropping cycles and forest use).

I have devoted this paper to highlighting the importance of including gender in studies of how HWC affects communities, in the belief that gender issues cut across other social categories such as caste and class. But certainly, poverty and class do matter. My experiences with residents of Bhalalogpur suggest that HWC is linked to a larger suite of problems associated with low incomes, limited external resources, and dependence on protected areas more broadly. The constant strain to find enough money means that the direct effects of any major crop-raiding event or physical encounter between villagers and elephants can push already struggling families over the line – forcing them to choose, for example, between food security, clothing, or education of children. As Naughton-Treves and Treves (2005, p. 236) have similarly observed while studying HWC in Africa, such “compounding vulnerability” is deeply problematic for members of the poorest households, and particularly so for widows and invalids. In a small village such as Bhalalogpur where nearly all families are affected by HWC in some way, villagers' already fragile sense of well-being and security can be further undermined by the costs described in this paper.

---

<sup>9</sup> The period in which adolescent males depart from the natal herd.

For people living in the study area, the persistence of HWC and associated feelings of marginalization and powerlessness also reflect an ongoing conflict between villagers, park animals, and the Indian government that has yet to be resolved.<sup>10</sup> In the absence of viable alternatives to forest-dependence, local people passively accept the social and economic costs of conservation imposed upon them by the park. However, as in other places, people in the future may be tempted to retaliate against wildlife in protest or seek to implement solutions of their own design instead. The implications of such actions can be severe for both people and wildlife, illustrated by the recent case of a Gujarati cotton farmer whose electrified barbed wire fence caused the death of three lionesses and two cubs. If convicted for his misdeeds, he faces up to seven years of imprisonment (*Times of India*, 20 Oct. 2007).<sup>11</sup> The future costs of HWC in this case will clearly be borne not only by the farmer himself but by his family members (as well as by the State, the public, and the remaining four orphaned cubs). Continued mutual transgression of the forest–field boundary by villagers and wildlife ensures that problems around HWC will only increase. From both a feminist standpoint and sustainable livelihoods or conservation-oriented perspective, reduction of HWC remains imperative.

There are some ways in which park managers, policy-makers, and the conservationists with whom they work can begin to address the hidden costs of HWC described in this paper. A feminist political ecology approach to HWC ensures that possible solutions to problems of HWC will be based on a careful consideration of the role of relevant gendered knowledge systems, gendered spaces, gender-based networks, and gendered uses of the environment (Rocheleau et al., 1996). Compensation policies, for example, can be reformed to address both the need for a more gender-sensitive definition of “cost” and the need for meaningful participation by households of all economic categories (Ogra and Badola, in review). More payments can also be made “in kind” to help offset the hidden costs of HWC, as has been recently suggested by the IUCN African Elephant Specialty Group (AfESG, 2007). Secondly, in terms of conflict prevention, interventions intended to enforce spatial separation (e.g., fencing, promotion of alternate fuel/fodder sources) should be designed and implemented with participation of both male and female users, and with particular attention to gendered uses of the landscape (Rocheleau et al., 1996). For example, one proposal to reduce forest use – providing alternative fuel sources – could potentially decrease a woman’s status in the household if she can no longer perform the status-building activities associated with the forest. Successful ecodevelopment<sup>12</sup>

---

<sup>10</sup> Conflict between villagers and park animals can also be interpreted as part of a wider people-parks conflict, in which villagers experience conflict with the State over access to park resources and other sources of livelihood support such as development assistance. Though a full discussion of this perspective is beyond the scope of this paper, in such a scenario park animals serve as representatives of the government and fail to behave as “good neighbors” (e.g., as discussed in Naughton-Treves’s, 1997 study of people-park conflict in Uganda).

<sup>11</sup> Investigators ruled out poaching as a possible motive when the bodies of the dead lions were discovered intact in a deep pit, which the farmer also confessed to having dug for the purpose of hiding the evidence (*Times of India*, 20 Oct. 2007).

<sup>12</sup> Since 1991, the Government of India has committed funds to the promotion of “ecodevelopment” through site-specific programs which seek to integrate Forest Department activities with those of other

will help both women and men to derive new sources of income/status unrelated to forest work or subsistence agriculture, as well as foster local economic benefits from the park. This could help to reduce the pressures for males to migrate out of the village as well as create a local stake in conservation.

Although the results of this study are specific to the village that I have called Bhalalogpur, they have relevance for other park-dependent communities. Ultimately, I hold that if women and men experience conflict with wildlife in fundamentally different ways, then approaches to mitigating conflict must also be gender-sensitive. Such sensitivity would help to promote more positive people-park relations in protected area communities. It could also help to shape more socially just, and potentially more effective, conflict mitigation strategies to reduce HWC. There are many Bhalalogpurs.

### Acknowledgements

Support for this research was generously provided by the National Science Foundation (DDRI No. 0233402), Fulbright Fellowship Program, Boren Graduate Fellowship Program, Developing Areas Research and Teaching (DART) Program of the University of Colorado, the Wildlife Institute of India (WII), and Gettysburg College. I also wish to thank Rachel Silvey, J. Terrence McCabe, Ruchi Badola, Shivani Chandola, Rutherford V. Platt, Paul Robbins, Lisa Naughton, and two anonymous reviewers for their valuable insights and assistance. My deepest thanks go to the residents of Bhalalogpur for accepting me into their community and supporting this project. This paper is dedicated in memory of Bhala Devi, a widow from Bhalalogpur who died tragically in another forest-based elephant encounter following the completion of this study.

### References

- African Elephant Specialty Group (AfESG) of the IUCN, 2007. Technical brief: review of compensation schemes for agricultural and other damage caused by elephants. Human–elephant conflict working group.  
<<http://www.iucn.org/themes/ssc/sgs/afesg/hec/comreview.html>>.
- Agarwal, B., 1987. Bargaining and gender relations: within and beyond the household. *Feminist Economics* 3 (1), 1–51.
- Agarwal, B., 1992. The gender and environment debate: lessons from India. *Feminist Studies* 18 (1), 119–158.

---

government agencies; it represents an effort to reduce economic dependence on protected areas through the promotion of alternative livelihoods, social welfare activities, and conservation awareness (Badola, 1994; c.f., Panwar, 1992; Badola et al., 2002).

- Agarwal, B., 2001. Participatory exclusions, community forestry, and gender: an analysis for South Asia and a conceptual framework. *World Development* 29 (1), 1623–1648.
- Ashmore, R., Deaux, K., McLaughlin-Volpe, T., 2004. An organizing framework for collective identity: articulation and significance of multidimensionality. *Psychological Bulletin* 130 (1), 80–114.
- Badola, R., 1994. People and protected areas in India: challenges of joint forest management and ecodevelopment. *Unasylva* 50(199). <<http://www.fao.org/docrep/x3030e/x3030e00.htm>>.
- Badola (Dhaundiya), R., 1997. Economic assessment of human–forest interrelationship in the forest corridor linking the Rajaji and Corbett National Parks. Ph.D. Thesis, Jiwaji University, Gwalior (India), Department of Economics. Dehradun, Wildlife Institute of India.
- Badola, R., 1998. Attitudes of local people towards conservation and alternatives to forest resources: a case study from the lower Himalayas. *Biodiversity and Conservation* 7, 1245–1259.
- Badola, R., Bhardwaj, A.K., Mishra, B.K., Rathore, B.M.S., 2002. Ecodevelopment Planning for Biodiversity Conservation: A Guideline. Wildlife Institute of India, Dehradun.
- Badola, R., Hussain, S.A., 2003. Conflict in paradise: women and protected areas in the Indian Himalaya. *Mountain Research and Development* 23 (3), 234–237.
- Bagchi, S., Mishra, C., 2006. Living with large carnivores: predation on livestock by the snow leopard (*Uncia uncia*). *Journal of Zoology* 268 (3), 217–224.
- Bauer, H., 2003. Local perceptions of Waza National Park, northern Cameroon. *Environmental Conservation* 30, 175–181.
- Bebbington, A., 1999. Capitals and capabilities: a framework for analyzing peasant viability, rural livelihoods, and poverty. *World Development* 27 (12), 2021–2044.
- Bhardwaj, A.K., Badola, R., Mishra, B.K., 2002. Building Partnerships for Biodiversity Conservation: A Collaborative Project with Ford Foundation in Rajaji National Park. Wildlife Institute of India, Dehradun.
- Blaikie, P., Brookfield, H., 1987. *Land Degradation and Society*. London, Methuen.
- Boserup, E., 1970. *Woman's Role in Economic Development*. Earthscan, London.
- Braidotti, R., Charkiewicz, E., Hausler, S., Wieringa, S., 1994. *Women, the Environment, and Development: Towards a Theoretical Synthesis*. Zed Books, London.

- Brandon, K., Redford, K., Sanderson, S., 1998. *Parks in Peril: People, Politics, and Protected Areas*. Island Press, Washington, DC.
- Carney, J., 1996. Converting the wetlands, engendering the environment. In: Peet, R., Watts, M. (Eds.), . In: *Liberation Ecologies: Environment, Development, Social Movements*. Routledge, New York, pp. 165–187.
- Chandola, S., 2001. Role of women in ecodevelopment. M.Sc. Disserta- tion, Department of Forestry (Economics and Management), Forest Research Institute (FRI), Dehradun, Wildlife Institute of India.
- Cutter, S., 1996. Vulnerability to environmental hazards. *Progress in Human Geography* 20 (4), 529–539.
- Dankelman, I., Davidson, J., 1988. *Women and Environment in the Third World: Alliance for the Future*. Earthscan, London.
- Denizen, N., Lincoln, Y., 2000. *Handbook of Qualitative Research*. Sage, Thousand Oaks.
- Distefano, E., 2003. Human–wildlife conflict worldwide: collection of case studies, analysis of management strategies and good practices. Food and Agricultural Organization of the United Nations (FAO), Sustain- able Agriculture and Rural Development (SARD) paper [http://www.fao.org/sard/common/ecg/1357/en/hwc\\_final.pdf](http://www.fao.org/sard/common/ecg/1357/en/hwc_final.pdf).
- Dow, K., 1992. Exploring differences in our common future(s): the meaning of vulnerability to global environmental change. *Geoforum* 23 (3), 417–436.
- Dwyer, D., Bruce, J. (Eds.), 1988. *A Home Divided: Women and Income in the Third World*. University Press, Stanford.
- Enarson, E., Morrow, B.H. (Eds.), 1998. *The Gendered Terrain of Disaster: Through Women’s Eyes*. Praeger, Westport.
- Folbre, N., 1988. The black four of hearts: toward a new paradigm of household economics. In: Dwyer, D., Bruse, J. (Eds.), *A Home Divided: Women and Income in the Third World*. Stanford University Press, Palo Alto, pp. 248–289.
- Fortmann, L., 1996. Gendered knowledge: rights and space in two Zimbabwe villages. In: Rocheleau, D., Thomas-Slayter, B., Wangari, E. (Eds.), *Feminist Political Ecology: Global Issues and Local Experiences*. Routledge, New York, pp. 211–223.
- Government of India (GOI), 2001. *Survey of wildlife protected areas in India*. New Delhi, Indian Institute of Public Administration.

- Government of India (GOI), 2007. Office of the registrar general and census commissioner of India (Census of India) On-line metadata file associated with the results of the 2001 Census of India (definition of household).  
<http://www.censusindia.gov.in/Metadata/Metada.htm#2d>.
- Guha, R., 1989. *The Unquiet Woods: Ecological Change and Peasant Resistance in the Himalaya*. Oxford University Press, Oxford.
- Hart, G., 1992. Imagined Unities: constructions of the household in economic theory. In: Ortiz, S., Lee, S. (Eds.), *Understanding Economic Process*. Lanham University Press, Lanham, pp. 111–129.
- Hewitt, K., 1997. *Regions of Risk: A Geographical Introduction to Disasters*. Longman, Essex.
- Hill, C., 1998. Conflicting attitudes towards elephants around the Budongo Forest Reserve, Uganda. *Environmental Conservation* 25 (3), 244–250.
- Hoare, R., 1999. Determinants of human–elephant conflict in a land-use mosaic. *Journal of Applied Ecology* 36 (5), 689–700.
- Hoare, R., 2000. African elephants and humans in conflict: the outlook for coexistence. *Oryx* 34 (1), 34–38.
- Hunter, M., Hitchcock, R., Wyckoff-Baird, B., 1990. Women and wildlife in Southern Africa. *Conservation Biology* 4 (4), 448–451.
- International Union for the Conservation of Nature (IUCN), 2003. Recommendation 20: preventing and mitigating human–wildlife conflicts, World Parks Congress, Durban, South Africa. <http://www.iucn.org/themes/wcpa/wpc2003/pdfs/outputs/recommendations/approved/english/html/r20.htm>.
- Jarosz, L., 1997. Women as rice sharecroppers in Madagascar. In: Sachs, C. (Ed.), *Women Working in the Environment*. Taylor and Francis, New York, pp. 127–138.
- Jhala, Y., 2002. Causes of wolf attack on livestock and children: implications for indian wolf conservation. Paper presented at the annual meeting of the Society for Conservation Biology, Canterbury, UK.
- Johnsingh, A.J.T., Negi, A.S., 2003. Status of tiger and leopard in Rajaji- Corbett Conservation Unit, northern India. *Biological Conservation* 111, 385–393.
- Johnsingh, A.J.T., Goyal, S.P., Rawat, G.S., Rajvanshi, A., Krausman, P., Williams, C.A., Hazra, A., Singh, A.K., Kakati, K., Dasgupta, J., 2002. The relationship among large herbivores,

- habitat, and humans in Rajaji-Corbett National Parks, Uttarakhand, Dehradun, Wildlife Institute of India.
- Kuriyan, R., 2002. Insights and applications: linking local perceptions of elephants and conservation: Samburu Pastoralists in Northern Kenya. *Society and Natural Resources* 15 (10), 949–957.
- Leach, M., 1992. Women's crops in women's spaces: gender relations in Mende rice farming. In: Croll, E., Parkin, D. (Eds.), . In: *Bush Base, Forest Farm: Culture, Environment and Development*. Routledge, New York, pp. 76–97.
- LeCompte, M., Schensul, J., 1999. *Analyzing and Interpreting Ethno- graphic Data*. Altamira Press, Walnut Creek.
- Liverman, D., 1990. Vulnerability to global environmental change. In: Kasperson, R. (Ed.), *Understanding Global Environmental Change*. Earth Transformed Program, Worcester, MA.
- Mawdsley, E., 1998. After Chipko: from environment to region in Uttarakhand. *Journal of Peasant Studies* 25 (4), 36–54.
- Mehta, M., 1996. Our lives are no different from that of our buffaloes: agricultural change and gendered spaces in a central Himalayan valley. In: Rocheleau, D., Thomas-Slayter, B., Wangari, E. (Eds.), *Feminist Political Ecology: Global Issues and Local Experiences*. Routledge, New York, pp. 180–210.
- Nabane, N., Matzke, G., 1997. A gender-sensitive analysis of a community-based wildlife utilization initiative in Zimbabwe's Zambezi valley. *Society and Natural Resources* 10 (6), 519–535.
- Narayan, U., 2002. Contesting cultures: westernization, respect for cultures, and third world feminists. In: Schech, S., Haggis, J. (Eds.), *Development: A Cultural Studies Reader*. Blackwell, Malden, MA, pp. 225–238. National Biodiversity Support Action Programme (NBSAP), 2002. *Human–Wildlife Conflicts in India* (working paper). New Delhi/Pune, NBSAP/Kalpavriksh.
- Naughton-Treves, L., 1997. Farming the forest edge: vulnerable people and places around Kibale National Park, Uganda. *Geographical Review* 87 (1), 27–46.
- Naughton, L., Rose, R., Treves, A., 1999. The social dimensions of human–elephant conflict in Africa: a literature review and two case studies from Uganda and Cameroon. Gland, IUCN.

- Naughton-Treves, L., Treves, A., 2005. Socio-ecological factors shaping local support for wildlife: crop-raiding by elephants and other wildlife in Africa. In: Woodroffe, R., Thirgood, S., Rabinowitz, A. (Eds.), *People and Wildlife: Conflict or Coexistence?* Cambridge University Press, London, pp. 252–277.
- Nyhus, P., Osofsky, S., Ferraro, P., Madden, F., Fischer, H., 2005. Bearing the costs of human–wildlife conflict: the challenges of compensation schemes. In: Woodroffe, R., Thirgood, S., Rabinowitz, A. (Eds.), *People and Wildlife: Conflict or Coexistence?* Cambridge University Press, London, pp. 107–121.
- Ogra, M., Badola, R., in review. Compensating human–wildlife conflict in protected area communities: ground-level perspectives from Uttarakhand, India.
- Panwar, H.S., 1992. Ecodevelopment: an integrated approach to sustainable development for people and protected areas in India. In: *Proceedings of the IV World Congress on National Parks and Protected Areas*, Feb. 10–21, 1992, Caracas Venezuela.
- Pearson, R., Jackson, C. (Eds.), 1998. *Feminist Visions of Development: Gender Analysis and Policy*. Routledge, New York.
- Peet, R., Watts, M. (Eds.), 1996. *Liberation Ecologies: Environment, Development, Social Movements*. Routledge, New York.
- Pokhriyal, H.C., 1994. *Human Environment and Socio-economic Development in the Himalayas: An Institutional Study of Natural and Human Resource Management in the Garhwal and Kumaon Himalayas*. B.R. Publishing, New Delhi.
- Prashant, S., 2004. “Leopard–Man Conflict.” *Deccan Herald*, Feb. 1, 2004. <http://www.deccanherald.com/deccanherald/feb012004/sl3.asp>.
- Rajpurohit, K.S., Krausman, P.R., 2000. Bear conflicts in Madhya Pradesh, India. *Wildlife Society Bulletin* 28 (2), 393–399.
- Rangan, H., 1996. From Chipko to Uttarakhand: Development, environment, and social protest in the Garhwal Himalayas, India. In: Peet, R., Michael Watts, M. (Eds.), *Liberation Ecologies: Environment, Development, and Social Movements*. Routledge, New York, pp. 205–226.
- Rocheleau, D., Thomas-Slayter, B., Wangari, E., 1996. *Feminist Political Ecology: Global Issues and Local Experiences*. Routledge, London.
- Sen, A., 1981. *Poverty and Famine: An Essay on Entitlement and Deprivation*. Oxford University Press, Oxford.

- Sethi, N., 2003. Battle zones: afterwards, an eerie silence. *Down To Earth*, March issue.
- Shiva, V., 1989. *Staying Alive: Women, Ecology, and Development*. Zed Books, London.
- Sifuna, N., 2005. Providing compensation for damage caused by wildlife: a case study of Kenya with particular reference to elephants. *Journal of Social Development in Africa* 20 (1), 7–39.
- Terborgh, J., Van Schaik, C., Davenport, L., Rao, M., 2002. *Making Parks Work: Strategies for Preserving Tropical Nature*. Island Press, Washington, DC.
- Thirgood, S., Woodroffe, R., Rabinowitz, A., 2005. The impact of human–wildlife conflict on human lives and livelihoods. In: Woodroffe, R., Thirgood, S., Rabinowitz, A. (Eds.), *People and Wildlife: Conflict or Coexistence?* Cambridge University Press, London, pp. 13–26.
- Times of India, 2007. “Five Gir Lions Electrocuted” Front page, 20 Oct. 07. New Delhi edition.
- Williams, A.C., 2002. Elephants (*Elephas maximus*), their habitats in Rajaji-Corbett National Parks, Northwest India. Ph.D. Thesis in Wildlife Science, Saurashtra University, DehraDun, Wildlife Institute of India.
- Wildlife Trust of India (WTI), 2007. *From Ganesh to Bin Laden* (draft manuscript). New Delhi: Wildlife Trust of India.
- Wisner, B., Cannon, T., Davis, I., 2004. *At Risk: Natural Hazards, People’s Vulnerabilities, and Disasters*, second ed. Routledge, New York.
- Woodroffe, R., Thirgood, S., Rabinowitz, A. (Eds.), 2005. *People and Wildlife: Conflict or Coexistence?* Cambridge University Press, London.