Converting conflicts to consensus: A road map for mitigating human–wildlife conflict in the Kangchenjunga Landscape
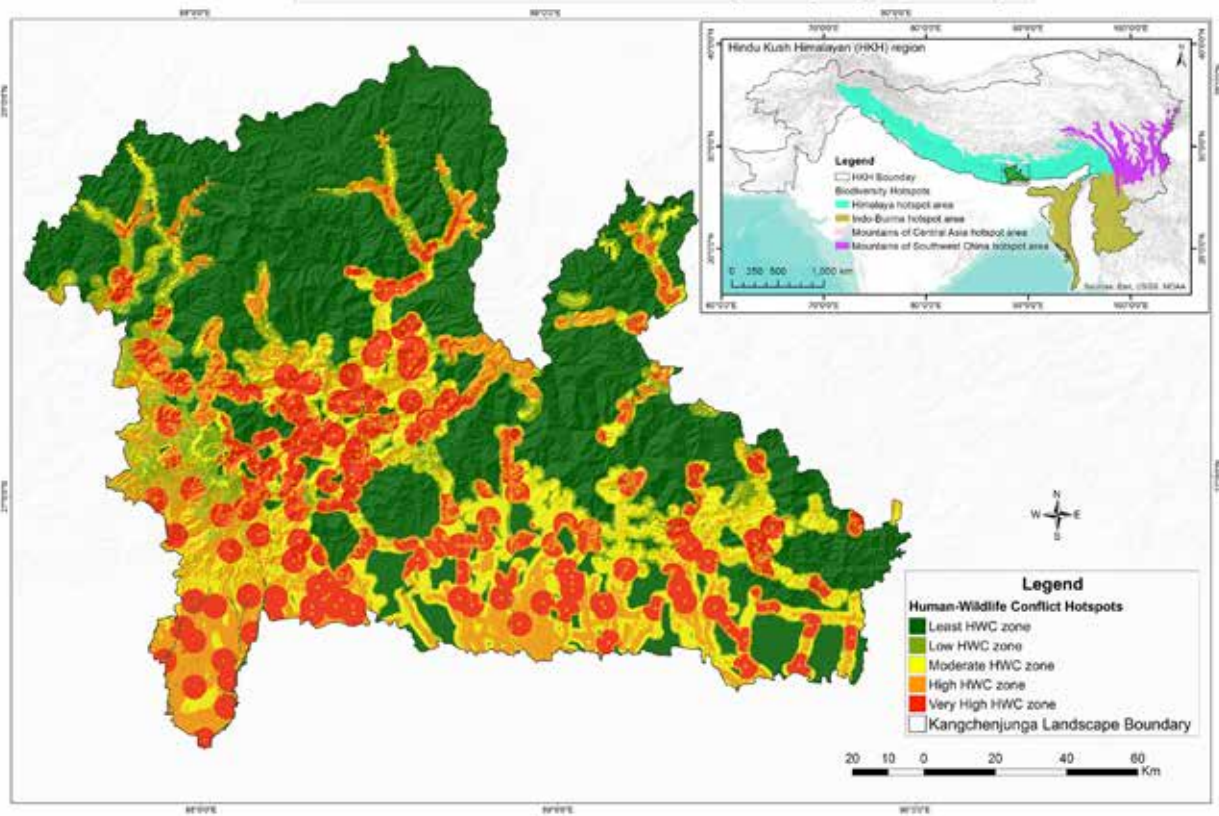
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Introduction

Human–wildlife conflict (HWC) commonly describes problematic situations between wild animals and people. The conflict emerges when their requirements overlap, with consequential costs to both. In general, there are four principal causes for HWC in the Kangchenjunga Landscape.

- Human population growth leads to expanded human settlements, increasing chances of human–wildlife interactions.
- The increasing demand for natural resources has led to humans transforming forests and other ecosystems into agricultural land and cities, thereby leaving fewer resources for wildlife.
- Habitats for wildlife have disappeared or have been severely degraded, leading animals to wander into human settlements.

- Conservation successes could also lead to HWC in some cases. Animal populations often cannot be contained within conservation areas and thus encroach on human settlements. HWC also occurs when there are large herbivore migrations accompanied by predators or when there are conflicting demands over scarce resources such as water during the dry season or a drought.

HWC can thus be defined as the interaction between wild animals and people and the resultant negative impact on people or their resources, or wild animals or their habitat. It is a global challenge and a complex issue that requires an interdisciplinary approach.

Figure 1: **HWC hotspots in the Kangchenjunga Landscape**

Key points

- Conflict between people and wildlife is a major threat to the continued survival of many species, puts human lives at risk, and erodes local support for conservation.

- Between 1986 and 2018, 643 people were killed by elephants in the Kangchenjunga Landscape.

- Between 1958 and 2013, 164 elephants have been killed as a result of human interventions in the landscape.

- The rise in instances of HWC is mostly caused by growing human populations and the subsequent expansion of settlements and agriculture, overlapping resource demands, habitat loss, development of linear infrastructure, and inadequate habitat and habitat connectivity for a wide ranging animals.

- The issue of HWC is dominated by narratives of wildlife and human casualties and economic loss. However, the issue is complex and requires area-specific, issue-specific, and integrated mitigation approaches.

- Both sides are facing challenges that can be addressed through better knowledge of wildlife populations and behavioural ecology, effective communication within countries and across the landscape, inter-sectoral synergy and coordination, and regional institutional mechanisms.

HWC in the Kangchenjunga Landscape

HWC is an important issue in the Kangchenjunga Landscape, a transboundary landscape shared by Bhutan, India, and Nepal. The landscape transcends political boundaries and hosts several contiguous ecosystem types – forests, rangelands, wetlands, agro-ecosystems – that are inhabited by animals such as the Bengal tiger (*Panthera tigris*), one-horned rhinoceros (*Rhinoceros unicornis*), and Asian elephant (*Elephas maximus*) in the lowlands; red panda (*Ailurus fulgens*), takin (*Budorcas taxicolor*), and clouded leopard (*Neofelis nebulosa*) in the midhills; and snow leopard (*Panthera uncia*), Himalayan black bear (*Ursus thibetanus*), and blue sheep (*Pseudois nayaur*) in the high mountain region. Each of these wildlife species has negative (e.g. conflicts, injury or loss of life, damage to assets or infrastructure,

zoonotic disease, etc.) or positive (e.g. income generation through wildlife tourism) interactions with humans in the landscape. The three countries have set aside 30% of the geographical area of the Kangchenjunga Landscape for conservation – there are 19 protected areas, seven of them transboundary in nature.
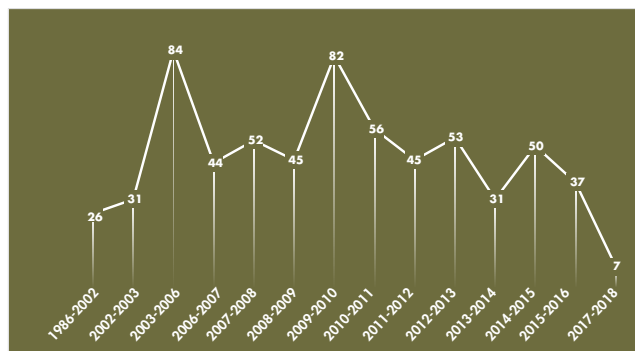
HWC is reported across the landscape, mainly involving large mammals (Figure 1) and mostly due to degradation or loss of wildlife habitats and migratory corridors, decreased food availability, and human incursions into wildlife habitats. The loss and degradation of wildlife habitats, which consequently affects food availability, increases the probability of wildlife intrusions into human settlements, resulting in crop depredation and human casualty. In the landscape's southern belt, which comprises lowland Terai-Duar savannah grasslands and tropical forests, human–elephant conflict is of particular significance. These ecosystems were once home to large herds of wild elephants that migrated from the east of Jhapa (Nepal), through West Bengal (India) to Bhutan and further east to Assam (India). Much of this elephant habitat has been significantly altered through land use conversion, thereby affecting elephants' foraging behaviour and obstructing their migration paths. Elephants consequently enter settlements and cultivated lands, destroying infrastructure and crops and occasionally causing human fatalities. Moreover, linear infrastructure and retaliatory measures such as electric fences result in the death or injury of elephants.

Key observations

Since 1986, at least 643 people have been killed and about 2,000 injured by elephants in the Terai-Duars region of the landscape, at an average of almost 20 deaths per year (Figure 2). Economic losses of up to a quarter of household income have been reported due to

crop and livestock damage by wildlife in the landscape. About USD 78,930 was provided in compensation for crop loss and USD 67,479 for human deaths and injuries in North Bengal during 2006–2016.

Wildlife faces equally high losses due to human interventions. Animals that cause damage to crops and livestock – including barking deer, civet, snow leopard, elephant, bear, and dhole – are intentionally exterminated. Between 1958 and 2013, at least 164 elephants have died, half of them due to accidents on railway tracks from Siliguri to Alipurduar in North Bengal, India.
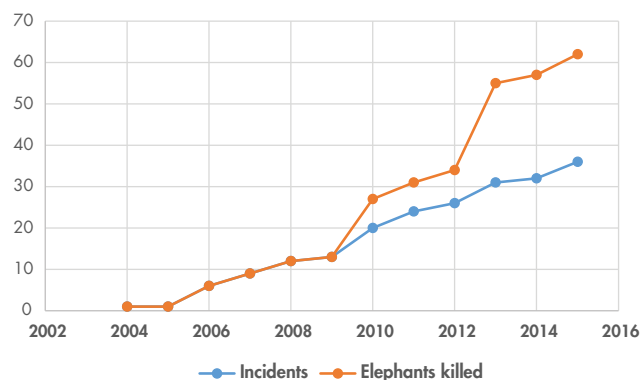
Recommended pathways

Creating space for dialogue: HWC is generally experienced by households located in rural areas, but decisions regarding compensation and resource management are made by officials who are generally not located in these areas. Therefore, creating space for HWC-related dialogue between conflict-affected households and decision makers is extremely important.

Upscaling good practices of mitigation measures: A number of good practices for HWC mitigation have

Figure 2: **Trend of human deaths due to human–elephant conflict in the Kangchenjunga Landscape.**
(Note: These figures are based on available literature and do not fully cover the extent of human casualties.)

Figure 3: **Cumulative trend of train hits and elephant mortality on railway tracks in North Bengal.**
(Note: These figures are based on available literature and do not fully cover the extent of casualties.)

been implemented in the landscape. Their effectiveness must be further analyzed and upscaled where possible. Furthermore, mitigation measures that have had success elsewhere could also be adopted in the landscape.

Inter-sectoral coordination: HWC is not an issue pertaining to the forestry sector alone. The role of other agencies and line departments, including agriculture, transportation, and the tea industry, among others, is equally important in addressing this issue. Coordination among these agencies is necessary to mitigate conflicts.

Building capacity and awareness: Wildlife behaviour, including food preferences, migration patterns, and predation behavior, affects the nature of HWC. Therefore, coordinated research and building awareness on such behaviour can enhance community preparedness and reduce conflict.

Ensuring migratory passage: Human incursions into pathways of migrating wildlife increases the incidence of HWC. Mitigation measures such as fencing must therefore be implemented in a manner that does not hinder migratory passage.

Human development and institutional mechanism: The regional challenges due to HWC, especially the movement of elephants and resultant interactions and conflict, could be better addressed through mutual understanding, human resources development, knowledge sharing, and formation of a task force to guide the process and address challenges collectively. The existing bilateral mechanism could be one area for improving the mechanism.

Population and habitat management: The populations of elephants and many other species are increasing in the landscape. However, the available habitat and corridors cannot support a growing wildlife population. This is likely to present significant challenges in the future for managing conflict and require inter-sectoral coordination within the countries as well as transboundary coordination.

Collaborative and interdisciplinary research: The transboundary nature of HWC in the Kangchenjunga Landscape provides an opportunity for conducting collaborative and interdisciplinary research on socio-ecological and other related issues.

For further information

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