



Government of India



# Guidelines for Human–Bear Conflict Mitigation

## Taking a Harmonious–Coexistence Approach



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## Acknowledgments

The Ministry of Environment, Forest and Climate Change, Government of India gratefully acknowledges the contributions of the experts and field practitioners who developed the guidelines, with support from innumerable contributors, using a participatory approach in workshops and consultations organised under the Indo-German Project on Human-Wildlife Conflict Mitigation in India.

The Ministry acknowledges the technical support extended by *Deutsche Gesellschaft für Internationale Zusammenarbeit* (GIZ) on behalf of the German Federal Ministry for Economic Cooperation and Development (BMZ), in the preparation and pilot implementation of these guidelines.

The Ministry acknowledges the support provided by the Wildlife Institute of India and the state forest departments of Karnataka, Uttarakhand and West Bengal for pilot implementation of the key elements of the guidelines during 2018-22 and the valuable feedback provided by them for updating the drafts.

**Ministry of Environment, Forest and Climate Change**



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# Abbreviations

BMZ	German Federal Ministry for Economic Cooperation and Development	MoEF&CC	Ministry of Environment, Forest and Climate Change
CWLW	Chief Wildlife Warden	M&E	Monitoring and Evaluation
CZA	Central Zoo Authority	NDRF	National Disaster Response Force
DBT	Direct Benefit Transfer	NGO	Non-governmental organization
DFO	Divisional Forest Officer	NHAI	National Highways Authority of India
DLCC	District-Level Coordination Committee	NTCA	National Tiger Conservation Authority
DNA	Deoxyribonucleic acid	NTFP	Non-timber forest product
DPSIR	Drivers–pressures–state–impact–response	NTG	National Technical Group
ECG	Electrocardiogram	NWAP	National Wildlife Action Plan
EDC	Eco-development Committee	OPs	Operating procedures
EIA	Environment impact assessment	PA	Protected area
EWRR	Early Warning and Rapid Response	PMFBY	Pradhan Mantri Fasal Bima Yojana
FD	Forest Department	PPE	Personal protective equipment
GIS	Geographical information system	PRT	Primary Response Team
GIZ	<i>Deutsche Gesellschaft für Internationale Zusammenarbeit</i>	RFID	Radio frequency identification
GSM	Global System for Mobile Communications	RRT	Rapid Response Team
HBC	Human-Bear Conflict	SDRF	State Disaster Response Force
HWC	Human–wildlife conflict	SFD	State forest department
HWC-MAP	Human–Wildlife Conflict Management Action Plan	SHG	Self-help group
HWC-NAP	National Human–Wildlife Conflict Mitigation Strategy and Action Plan	SOPs	Standard operating procedures
HWC-SAP	State-level HWC Mitigation Strategy and Action Plan	VFC	Village Forest Committee
IUCN	International Union for Conservation of Nature	WII	Wildlife Institute of India
JFM	Joint Forest Management	WLPA	Wild Life (Protection) Act, 1972

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# 1. ABOUT THE GUIDELINES

## 1.1 THE OVERALL CONTEXT

- These guidelines on human–bear conflict mitigation (HBC) get the overall context from the Wildlife (Protection) Act (WLPA), 1972, an advisory to deal with human–wildlife conflicts (MoEF&CC, 2021) and the National Human–Wildlife Conflict Mitigation Strategy and Action Plan of India (2021–26) (HWC-NAP)<sup>1</sup>. HWC-NAP provides the overall conceptual and institutional framework for implementing the guidelines.
- These guidelines take into consideration the existing guidelines, advisories and good practices relevant to HBC issued by IUCN/SSC/BSG and advisories and operating procedures (OPs) issued by various state forest departments (SFDs) and builds on them to bring about a more holistic approach to HBC mitigation.
- In addition to the HBC mitigation guidelines, the following species-guidelines are being developed under the project: Guidelines for Mitigating Human–Elephant, –Leopard, –Gaur, –Snake, –Crocodile, –Rhesus Macaque, –Wild Pig, –Blue Bull and –Blackbuck Conflicts.
- The following guidelines on cross-cutting issues are to provide guidance on selected issues: Guidelines for Cooperation between the Forest and Media sector in India: Towards effective communication on Human–Wildlife Conflict Mitigation; Occupational Health and Safety in the Context of Human–Wildlife Conflict Mitigation; Crowd Management in Human–Wildlife Conflict Related Situations; and Addressing Health Emergencies and Potential Health Risks Arising Out of Human–Wildlife Conflict Situations: Taking a One Health Approach.

## 1.2 PURPOSE AND SCOPE

- The guidelines aim to facilitate a common understanding among key stakeholders on what constitutes effective and efficient mitigation of HBC in India, leading to co-existence, and to ensure standardization in performing mitigation operations in the most effective and efficient manner, with minimum harm to humans and bears.
- The guidelines not only provide advice on mitigation measures to be used to address HBC in the long term but also facilitate the development, assessment, customization and evaluation of site-specific HBC mitigation measures that are effective and wildlife-friendly.
- The guidelines serve as a basis for overall long-term planning and coordination of HBC mitigation measures at the national, state and division levels.
- In general, the guidelines apply to all stakeholders relevant to HBC and are not limited to SFDs.
- The guidelines will be able to bring in more effectiveness and efficiency, when fully integrated into the division-level HWC Management Action Plans (HWC-MAPs) and state-level HWC Mitigation Strategy and Action Plans (HWC-SAPs)<sup>2</sup>.

## 1.5 INSTITUTIONAL MECHANISM FOR IMPLEMENTING OF THESE GUIDELINES

- The institutional mechanism outlined in the HWC-NAP will be followed for implementing these guidelines.

1 National HWC Mitigation Strategy and Action Plan of India (2021–26), available from <https://moef.gov.in/wp-content/uploads/2022/01/National-Human-Wildlife-Conflict-Mitigation-Strategy-and-Action-Plan-of-India-2.pdf>

2 Common Frameworks for Developing HWC-SAPs and HWC-MAPs (Supplementary Frameworks to HWC-NAP) (2021–26): <https://moef.gov.in/wp-content/uploads/2022/01/National-Human-Wildlife-Conflict-Mitigation-Strategy-and-Action-Plan-of-India-2.pdf>

3 'Harmonious coexistence' is defined as a dynamic but sustainable state in which humans and wildlife adapt to living in shared landscapes, with minimum negative impact of human–wildlife interaction on humans or on their resources and on the wildlife or on their habitats. The mitigation measures designed using this approach maintain a balance between the welfare of animals and humans in which both are given equal importance. Overlap in space and resource use is managed in a manner that minimizes conflict.

4 Supplementary Frameworks to the HWC-NAP: <https://moef.gov.in/wp-content/uploads/2022/01/National-Human-Wildlife-Conflict-Mitigation-Strategy-and-Action-Plan-of-India-2.pdf>

## 1.3 APPROACH

- The development and implementation of these guidelines is driven by a harmonious- coexistence approach<sup>3</sup> to ensure that both humans and bears are protected from negative impacts of HBC.
- The guidelines address the issue of HBC, taking a holistic approach. The holistic approach of the guidelines entails addressing not only the emergency situations arising due to immediate conflict situations but also the drivers and pressures that lead to HBC; providing guidance on establishing and managing prevention measures; and reducing the impacts of conflict on both humans and bears.
- The development of these guidelines and intended implementation are driven by a participatory approach. These guidelines are intended to facilitate participatory planning, development and implementation of HBC mitigation measures among key sectors and stakeholders at the national, state and division/district levels.
- The guidelines reflect on the need for a landscape approach while formulating solutions for mitigating HBC to ensure that the solutions are sustainable. Unless comprehensive and integrated HBC mitigation measures are implemented across the landscape, the problem is likely to only shift from one site to another.
- Efforts have been made to forge linkages with plans and guidelines of key relevant sectors for enhancing synergies and eliminating trade-offs during implementation.
- Taking a capacity development approach, the guidelines facilitate the implementers through provision of an *Implementer's Toolkit* to provide operating procedures (OPs), formats, checklists and other field implementation aids.

## 1.4 LEGAL AND POLICY FRAMEWORK FOR IMPLEMENTING THE GUIDELINES

- These guidelines should be read in conjunction with the existing relevant legal and regulatory frameworks, especially the WLPA 1972.
- The following legislations are considered directly relevant for conservation when dealing with HBC:
  - The Wild Life (Protection) Act, 1972
  - The Prevention of Cruelty to Animals Act, 1960
- Sections 9, 11(1)(a) (2) (3), 12(bb), 29, 35(6), 39(1)(a) of the WLPA 1972 are especially relevant when dealing with HBC.
- *Supplementary Framework to HWC-NAP on Legislative Framework for HWC Mitigation in India*<sup>4</sup> may be referred to for more details on specific legal provisions for HBC mitigation.
- Other important legislations that facilitate conservation when dealing with HBC include the Environment Protection Act, 1986; Indian Penal Code, 1860; Scheduled Tribes and Other Traditional Forest Dwellers (Recognition of Forest Rights) Act, 2006; the Indian Forest Act, 1927; the Forest (Conservation) Act, 1980; the Environment (Protection) Act, 1986; and Disaster Management Act, 2005.

## 2. CONTEXT AND SITUATION

India is home to four species of bear, viz., the Himalayan Brown Bear, Asiatic Black Bear, Sloth Bear and Sun Bear. Although they are classified as carnivores, bears are largely omnivorous, feeding on a variety of fruits/nuts, ground-layer vegetation and insects and scavenging on dead animals. They are excellent seed dispersers and hence play a significant role in the regeneration and regulation of the populations of many plant species in forests. Hence, bears are considered as indicators of habitat quality. In India, bears have been associated with humans since time immemorial, as evident from mythology, folklore, culture, customs and traditions.

Of the four bear species in India, two are in conflicts with humans, viz., the Sloth Bear and Asiatic Black Bear. The Himalayan Brown Bear too is in conflict with humans but is largely confined to the upper regions of the Western Himalaya. There have been no reports of conflicts associated with Sun Bear.

HBC refers to the negative interaction between humans and bears, leading to adverse impacts on humans (such as injuries to humans, loss of human life and impacts on emotional well-being) and their resources (crops, livestock and other properties) and on the bears or their habitats.

The drivers of HBC include exponential growths of human populations in forest-fringe areas; habitat fragmentation and degradation; development activities such as linear infrastructure construction; a continued dependence of communities on forests for their livelihoods; a mismatch of conservation goals with human aspirations and changing life styles; and inadequate stakeholder engagement. Increasing human–bear interface areas, inadequate alternative livelihood options in forest-fringe areas and limited awareness among humans living in and around bear habitats about bear behaviour create further pressures, leading to injuries and loss of human lives and livestock injury/loss.

HBC primarily takes place when humans enter bear habitats for non-timber forest produce (NTFP) collection or for grazing their cattle or when bears enter human habitations in search of forage. Bear populations that occur outside protected areas (PAs), share space with humans, thereby increasing the probability of accidental encounters.

The Sloth Bear (*Melursus ursinus*) is a myrmecophagous species (specialized for feeding on termites and ants) that is very widely but patchily distributed in India. The Sloth Bear is found in forested as well as rocky and scrub habitats. The densities of Sloth Bear populations in India vary across the distribution range of the species. The conflict associated with the Sloth Bear is increasing rapidly.

The Asiatic Black Bear (*Ursus thibetanus*) is distributed in the forested habitats of the Himalayan region and the hills of the Northeast. The human–Asiatic Black Bear conflict is spread all across the distribution range in India, and it results in crop damage and livestock loss/injury.

The current response to HBC includes measures to prevent retaliatory killings of bears by humans, creating awareness amongst local communities to reduce accidental encounters and rescuing stranded bears or bears-in-conflict. As HBC leads to a changed perception of humans towards wildlife, the overall support for conservation declines. Therefore, it is important to address the issue in a holistic way, i.e., address the drivers and pressures, further develop prevention and emergency response measures and reduce the vulnerability of humans and bears to HBC in the interest of the overall need for conservation of wildlife/biodiversity in the country.

### 3. ADDRESSING THE DRIVERS AND PRESSURES OF HUMAN–BEAR CONFLICT

HBC is a multi-faceted challenge, and thus finding solutions for prevention and mitigation requires an integrated and holistic approach. A major gap in HBC mitigation is effective identification of location-specific drivers and pressures of conflict that will allow appropriate selection of mitigation measures.

A systematic analysis of existing HBC mitigation methods may be carried out to assess their effectiveness and wildlife-friendliness and to assess their potential for replication in other locations and situations.

HWC-NAP recommends a holistic approach to HWC mitigation by considering and addressing the thematic triangle of drivers–prevention–damage mitigation. These guidelines are prepared in line with the recommended holistic approach to bridge the current gap.

#### 3.1 MONITORING AND ADDRESSING HABITAT LOSS, FRAGMENTATION AND DEGRADATION

Monitoring the drivers and pressures will play a crucial role in understanding and mitigating HBC. The following habitat-related assessment and actions, which may need to be implemented by the SFDs in cooperation with other line departments and national-level and state-level agencies having the required expertise and technology, may help in planning these mitigation measures:

- Mapping the existing drivers and pressures of conflict and land use and land cover (LULC) changes and regularly monitor changes in the extent of the bear habitat, fragmentation and degradation due to developments (such as linear infrastructure), mining, encroachments, human settlements within forests and other anthropogenic pressures (collection of NTFP, stone quarrying, urban expansion, etc.).
- Identifying and mapping the areas covered by invasive species and carry out operations for improving the habitat, especially improving the production of NTFP.
- Ensuring that all forest boundaries are clearly demarcated so that patrolling teams can identify boundaries for detection of any encroachments.
- Collecting additional data on the bear habitat during the coordinated All India Tiger, Co-predator and Prey Population Estimation (AITE) exercises in the Tiger range areas and during the Snow Leopard Population Assessment in India (SPAII) exercises in the Himalayan region.

- Mapping land tenures and identifying communities who are stakeholders in these lands; conduct regular consultations with local communities to explore/develop Community Reserves and Other Effective Area-Based Conservation Measures (OECMs) to secure bear habitats.
- Engaging other relevant line departments whose officials can facilitate enhancing/improving livelihood options that reduce the extent and intensity of the anthropogenic pressure on natural bear habitats.
- Preparing, implementing and periodically updating long-term perspective plans, such as state-level HWC mitigation strategy and action plans (HWC-SAP), and division-level HWC management action plans (HWC-MAP). A common framework for developing these plans is provided in the *Supplementary Frameworks to the HWC-NAP*.
- Developing synergies and facilitating integrated land-use planning for effective implementation of planned measures through the state-level Coordination Committees (SLCC), the Multi-stakeholder Fora at the state level, the Joint Working Groups with key departments and agencies at the landscape level and the district-level Coordination Committees (DLCC).
- Engaging with local communities, especially the community PRTs, to develop innovative firefighting strategies, deploying the required equipment, using remote sensing technology, etc., to reduce the risk of habitat degradation due to forest fires.

#### 3.2 REMOVAL OF INVASIVE PLANT SPECIES IN AND AROUND BEAR HABITATS

There may be suppression and reduction of indigenous food plants of bears due to the overabundance of invasive alien species in the area, resulting in decreased habitat quality and a consequent increase in the movements of bears out from forested landscapes into human-use landscapes, leading to increased HBC. The following measures are envisaged:

- SFDs may map the invasive species cover and abundance in the landscape and the bear use of the landscape and make further plans accordingly.
- Use of remote sensing data may be explored data for mapping invasive plants' hotspots and for managing the spread of invasive species.



- Prioritizing sites for intervention on the basis of hotspots of invasive species, areas critical for bears (and other herbivores) and conflict history to ensure efficient mitigation, given the scale of the problem and the challenges involved in containing and eliminating invasive species over large landscapes.
- Clearing vistas along the boundaries of forests close to human habitations for improving the visibility and avoiding sudden and accidental encounters with bears.

### 3.3 REDUCE LIVELIHOOD DEPENDENCE OF PEOPLE ON FORESTS

Accidental encounters of humans with bears inside forest areas can be prevented to a large extent by reducing dependence of humans on the forest. The following indicative measures may be implemented:

- Facilitating management interventions for better livelihood opportunities for communities living close to the forest, through community participatory approaches, including various eco-development measures and livelihood improvement programmes
- Reducing the dependence of forest-fringe communities on the forest for cattle grazing, fodder collection, fuelwood collection, non-timber forest produce (NTFP) collection, right of way, etc. through participatory forest management tools
- Addressing livelihood needs of communities through skill development, poverty alleviation and alternate income generation schemes of the Government
- Facilitating cross-sector linkages for community development (coordination and cooperation with line departments)
- Facilitating cooperation to integrate HBC mitigation planning at the district level, through measures including, but not limited to, dovetailing HBC mitigation measures with schemes relevant to community development.

### 3.4 MEASURES TO STRENGTHEN THE ROLE OF KEY STAKEHOLDERS AND CROSS-SECTOR COOPERATION

Cross-sectoral cooperation for HBC mitigation entails engagement of multiple stakeholders from different sectors and domains at the national, state and district/forest division levels. Key stakeholders for HBC mitigation may include the state forest department and other line departments, viz., the agriculture, revenue, animal husbandry, police, public works, health and family welfare and education departments and electricity boards; the private sector (fruit orchards and plantations); agencies, viz., railways, National Highway Authority of India; wildlife conservation and development NGOs; farmers' cooperatives and agricultural research institutions. The following measures are envisaged:

- State-level Coordination Committees (SLCC), landscape-level Multi-stakeholder Fora and District-level Coordination Committees (DLCC) may be used to strengthen the inter-agency coordination required for HBC, and district-specific operational mechanisms may be developed to address specific HBC mitigation needs.
- SFDs may facilitate the provision of support to the community-level (village/ward) Primary Response Teams (Community PRTs) as the entry point for all community engagement work. Establishment and capacity development of PRTs are to be in line with the *Supplementary Framework to HWC-NAP on Establishment and Capacity Development of HWC Mitigation Response Teams*.
- Maintaining information and data on HBC cases with reference to the developments in the area that may have a bearing on conflict cases, may be used for discussions in the DLCC.

### **3.5 COMMUNITY AWARENESS AND COMMUNICATION MEASURES TO FACILITATE EFFECTIVE ENGAGEMENT OF LOCAL COMMUNITIES IN HBC MITIGATION**

To facilitate effective engagement of local communities and various stakeholders in mitigation of HBC, it is extremely important to adopt a participatory approach in planning and implementing awareness and sensitization measures.

- Appropriate community awareness and communication measures may be implemented at HBC hotspots, and their impacts may be assessed periodically to ensure that the awareness and communication measures are locally customized.
- Participation from key stakeholders may be facilitated to ensure integration of traditional and local knowledge and experiences into development of division-level HWC Management Action Plans (HWC-MAPs) towards bear conservation and developing HBC mitigation measures.
- Successful cases may be documented by experts/organizations and can be used to motivate people to contribute to effective garbage management practices.

### **3.6 EFFECTIVE GARBAGE MANAGEMENT AND SAFE SANITATION IN AND AROUND BEAR HABITATS**

Garbage is known to attract bears, and when garbage dumps are located on the periphery of forests or inside villages/towns, potential for accidental encounters between people and bears is created. Unmanaged garbage may also habituate bears to moving and foraging in human-use areas, and as a consequence there may be high levels of conflict.

The following measures are suggested:

- Ensuring sustainable and ecologically sound waste and garbage disposal by town municipalities and village panchayats on the borders of bear habitats, especially at HBC hotspots
- Undertaking periodic inspection by SFDs and other government departments/organizations of the forest perimeter near villages/towns to ensure that poor disposal of waste and garbage is detected early and brought to the notice of relevant local authorities. Volunteers can be engaged for such exercises.
- Community awareness, signage, etc. to facilitate effective participation of local communities in garbage management

- SFDs may also coordinate with municipalities/panchayats on garbage management and explore the possibility of building toilets under the Swachh Bharat Mission to prevent accidental encounters at HBC hotspots.
- ‘Aversion conditioning’ measures to be implemented in areas where bears have started foraging within the boundaries of villages and towns in search of garbage

### **3.7 SYSTEMATIC RESEARCH AND MONITORING ADDRESSING HBC**

HBC mitigation is a challenging issue, especially when adequate data on the bear population density, ecology, demography and social and ranging behaviour and on the extent of damage caused by bears are not easily available. There is a clear need to have a more holistic understanding of HBC and its implications for both humans and bears.

SFDs may involve research institutions, non-governmental organizations (NGOs) and experts to carry out result-oriented research on the HBC status and mitigation measures, besides undertaking in-house research.

The following is an indicative list of research and action priorities that maybe taken up by research organizations:

- Study consequences of habitat fragmentation on density and population genetics of bears.
- Map the bear foraging, ranging and distribution patterns within human-dominated landscapes as the baseline for HBC mitigation planning
- Population dynamics and predictive modelling to manage conflict
- Monitor temporal overlap and segregation of human and bear activities
- Assess the socio-economic status of local communities living in and around bear habitats and their dependence on forest resources, as well as crop/livestock losses due to encounters with bears
- People’s perception surveys at HBC hotspots; gap analyses to develop awareness and communication measures
- Cost-effective crop protection measures in fruit orchards and crop fields
- Study to be conducted to understand the ethology of human–bear dynamics
- Explore the use of advanced technology to deter bear from entering human-dominated landscapes and to isolate anthropogenic food sources from bears

- Develop and use standardized criteria for assessing the effectiveness and wildlife-friendliness of mitigation measures

### **3.8 FACILITATING CAPACITY DEVELOPMENT MEASURES TO DEVELOP THE REQUIRED COMPETENCIES FOR ADDRESSING HBC IN THE MOST EFFECTIVE AND EFFICIENT MANNER**

Capacity development of SFDs, other line departments, local communities and all key stakeholders may be facilitated to ensure that a holistic approach can be followed:

- SFDs may ensure that all response team personnel from forest and other line departments and agencies are brought under a systematic approach to capacity development, in line with the *Supplementary Framework to HWC-NAP on Establishment and Capacity Development of HWC Mitigation Response Teams*<sup>5</sup>
- Response teams and other field personnel and local community may be trained regularly and awareness measures carried out on prevention of zoonotic and other emerging diseases, and occupational health and safety, following the ‘One Health’ approach<sup>6</sup>
- Regular and systematic specialized training programmes on critical operations such as rescue, capture and translocation may be conducted jointly with other key relevant departments in the form of mock-drills and simulation training sessions.
- Advanced training programmes on animal welfare issues may be conducted for all personnel of the rapid response teams (RRTs)
- Competencies of members of RRTs may be reviewed on a regular basis, and their training curricula to be fine-tuned and updated regularly.

### **3.9 MEASURES TO STRENGTHEN THE SYSTEM OF KNOWLEDGE MANAGEMENT IN HBC MITIGATION**

To ensure that HBC mitigation measures are effective and sustainable, it is essential that field experiences, learnings, field-evidence and conceptual advances be not only shared across key stakeholders and landscapes but that such knowledge be also documented, to be utilized for future strategies and plans related to HBC mitigation.

- The National as well as landscape-level multi-stakeholder Mitigation Fora and appropriate Working Groups may be used to share field experiences, learnings, success stories, evidence and conceptual advances, within/between the SFDs, across stakeholders and across bear landscapes
- Measures may be put in place to systematically document field experiences, learnings, field-evidence and conceptual advances related to HBC mitigation, to inform the future strategies and plans on HBC mitigation

5 Supplementary Framework to HWC-NAP on Establishment and Capacity Development of HWC Mitigation Response Teams: <https://moef.gov.in/wp-content/uploads/2022/01/National-Human-Wildlife-Conflict-Mitigation-Strategy-and-Action-Plan-of-India-2.pdf>

6 The One Health concept is based on the understanding that human, animal, and environmental health are closely interconnected and interdependent. One Health is a collaborative, multi-sectoral and trans-disciplinary approach working at the local, regional, national and global levels with the goal of achieving optimal health outcomes, recognizing the interconnection between people, animals, plants and their shared environment.

## 4. PREVENTING HUMAN–BEAR CONFLICTS

Sloth Bears and Black Bears have a behavioural tendency to become habitual foragers of crops and Black bears are involved in livestock depredation. Most HBC cases are the result of accidental encounters in forests/farm lands. However, the chances of an intentional repeat encounter by a bear are very rare.

There are a few instances of bears habitually frequenting human habitation, foraging in croplands and becoming unusually irritable and aggressive (particularly when with cubs) towards humans.

Instances of accidental encounters with bears near their denning sites (used for resting and breeding) are common as bears may feel threatened and territorial instincts may be triggered.

### 4.1 DIFFERENTIAL MITIGATION APPROACH FOR DIFFERENT HBC SCENARIOS

HBC mitigation can be effectively addressed by a systematic analysis of the information on the type of conflict, the site of occurrence and its overall impact on humans and bears.

### 4.2 IDENTIFYING HOTSPOTS OF HBC

“HWC hotspots” are areas with actual or predicted repeated occurrence of HWC incidents that result in crop loss, livestock death, human death and injury and wildlife death and injury over temporal and spatial scales. Incidents can be static (repeated in the same place or time) or dynamic (shift in space and time over years). In addition to count statistics, the magnitude of the incidents is subjected to interpolation or extrapolation techniques to define the hotspots in space and time.

Identifying conflict hotspots, which could also provide a direction towards the drivers of conflict, is critical to providing site-specific solutions to mitigate HBC. Conflict hotspots of HBC can be mapped through geo-spatial assessments, using both primary and secondary data, including time-series data. The hotspots can be identified and mapped as follows:

- **Incident hotspot** – Frequency of occurrence of incidences over a specific period, such as 5 or 10 years, mapped over the target area. The data would include the number of incidences of crop loss, human injury/death and livestock injury/death.

- **Vulnerability hotspot** – Cumulative index calculated by overlaying past incidents, the vulnerability of the local community and the potential risk of the area.

The following assessments are envisaged:

- Database may be created by involving frontline SFD personnel, researchers, research institutions, veterinary professionals and others for identifying and assessing the hotspot
- Predictive modelling based on the field data and geographic information system (GIS) analysis may be carried out by trained personnel.

### 4.3 EFFECTIVE USE OF EARLY WARNING AND RAPID RESPONSE SYSTEMS AT HBC HOTSPOTS

An Early Warning and Rapid Response (EWRR)<sup>7</sup> system may be established and used to enhance the preparedness and overall efficiency of mitigation efforts in the field.

The EWRR system may be in line with the *Supplementary Framework to HWC-NAP on Establishment and Capacity development of HWC Mitigation Response Teams*<sup>8</sup>.

- The system of early warning and rapid response can be used for detecting early conflict cases with bears and for ensuring appropriate responses in cases of HBC.

<sup>7</sup> EWRR is a set of tools, processes and personnel competencies needed for timely and meaningful generation and dissemination of alert information to individuals, communities and establishments at risk, for optimal preparedness and responses at the appropriate time, to reduce the likelihood of injury, death or crop damage. EWRR structurally includes an HWC Mitigation Hub/Control Room and a system of three-tiered response teams, viz., Division-Level Rapid Response teams (Division RRTs), Range-Level Rapid Response Teams (Range RRTs) and village-/ward-level Primary Response Teams of the local community (Community PRTs).

<sup>8</sup> Supplementary Frameworks to the HWC-NAP: <https://moef.gov.in/wp-content/uploads/2022/01/National-Human-Wildlife-Conflict-Mitigation-Strategy-and-Action-Plan-of-India-2.pdf>

#### **4.4 MONITOR AND DOCUMENT 'POTENTIAL BEARS-IN-CONFLICT' IN THE LANDSCAPE**

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A potential bear-in-conflict is an individual that is likely to enter a HBC situation owing to its movement pattern or other behaviour. Male bears, and bears with cubs, sometimes become habituated to easy food and frequently move into human-dominated landscapes in search of such food. SFDs may identify and manage such high-conflict individuals and monitor their movements within the favoured human-dominated areas.

Monitoring potential bears-in-conflict in the interface area can be carried out as a preparedness and prevention measure, to ensure that their movements within human-dominated landscapes do not lead to emergency situations. The following are methods for monitoring bears:

- Bear population monitoring may be done using sign surveys and camera traps. The data may be used to derive the relative abundances at the range and division levels so that the population status of the bears and its bearing on human–bear interactions are better understood.
- Another method of bear population estimation is scat/hair DNA analysis, which yields precise population estimates. Monitoring programmes for the Tiger, co-predators, prey and their habitats may be extended to cover additional bear-centric variables, including the abundance of fruit-bearing trees and termite mounds (for Sloth Bears). Monitoring natural and man-made water resources may be done annually.
- SFDs may build identification profiles of all the bears within their jurisdiction and beyond for identification of potential bears-in-conflict in the field, and their respective areas of movement, especially within agricultural landscapes.
- Bear Scat samples in and around crop fields and near livestock kills may be collected. DNA samples may be collected from livestock kill sites to create a database of photographed bears in the landscape and the corresponding DNA for future matching/differentiating in incidents.
- The information on the spatio-temporal use of the landscape by bears can be used to determine potential points of overlap that can result in accidental encounters for priority management interventions aimed at reducing HBC.

- Bears that have become frequent crop foragers, those that attack livestock, young transient bears residing in sub-optimal habitats on the periphery of forests and old, displaced bears may be actively monitored, either by physical means or using a network of camera traps or by satellite tracking using radio-collars, so that early warnings can be provided to local communities when known bears are entering their areas. Data can also help understand their ecology, their ranging patterns and possible HBC mitigation measures. The data can be used by RRTs to test if aversion conditioning could stop bears from entering human-use areas or preying on livestock.
- Bears that frequent human habitations, garbage dumps, livestock kill sites and farmlands may be identified and monitored, if possible, by deploying camera traps at strategic locations.
- Community PRTs may be facilitated in systematically monitoring green spaces and abandoned fields that may provide natural feeding habitats and movement areas for bears.

#### **4.5 MANAGING 'POTENTIAL BEARS-IN-CONFLICT'**

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A novel useful approach would be to test different 'aversion techniques' to habituate bears-in-conflict to avoid human-dominated landscapes. Radio-collaring such individuals can be attempted so that systematic intervention is possible.

- Capture and translocation (if required) of individual bears that are highly aggressive may be carried out as per the existing rules and regulations and specific advisories from the state governments (if available). The rehabilitation of the bears in suitable habitats may be a viable option. Suitable areas for release may be determined.
- The movements of bears that are translocated to suitable habitats in deep forests may be monitored to determine their likelihood of returning to agriculture landscapes.
- Regular monitoring and reviewing of conflict situations by the state's Chief Wildlife Warden (CWLW) in all potential HBC hotspots may be ensured.

#### 4.6 JUDICIOUS USE OF BARRIERS, TAKING A LANDSCAPE APPROACH

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The preventive measures used by rural communities to deter bears from approaching their villages and crop fields or orchards are usually non-lethal methods that do not cause any harm to the bears. These methods are based on harmonious coexistence. The accessing by bears of non-natural food sources outside their habitats can be prevented by 'aversion conditioning' and causing fear-stimuli using the following methods:

- Facilitating local communities to develop their traditional barriers, including walls and fences, and keep monitoring the effectiveness and wildlife-friendliness of such barriers to optimize the design, material, etc. of these barriers.
- When SFDs are initiating the development of barriers, a participatory approach is to be adopted at all stages, i.e. planning, designing, monitoring and maintenance. Systematic engagement with communities is essential for the sustainability of such structures.
- Community-based institutions may be facilitated by SFDs through wildlife experts/organizations in motivating, training and hand-holding communities in the use of barriers to ensure that their measures are effective and wildlife-friendly.

#### 4.7 JUDICIOUS USE OF OTHER EXCLUSIONARY MEASURES, TAKING A HARMONIOUS-COEXISTENCE APPROACH

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The following measures are envisaged:

- The use of visual deterrents such as flashlights, torches, flashbulbs and other bright lights in villages and while travelling at night and flashing high-powered beams and torches will deter bears.
- The use of auditory deterrents, loud noise-creating devices, such as ANIDERS (Animal Intrusion Detection and Repellent Systems), and hooters temporarily deters bears at bay till a PRT/RRT arrives to drive the bear away.
- The use of olfactory deterrents is very effective with bears, which have an acute sense of smell. Such deterrents include pepper sprays and chili bombs. Cultivating unpalatable aromatic crops (capsicum, chillies, etc.) in kitchen gardens is also effective.

- The use of guard-dogs is helpful in raising an alarm upon sensing the presence of bears near human habitations.
- The use of hazing techniques—collective action by a large number of persons to drive bears back to the forest. This is only a temporary deterrent as the bears may return soon.
- Since fruit-bearing species such as *mahua*, *ber* and guave, and crops such as corn, millets etc. attract bears, local communities residing in HBC hotspots are to be encouraged to cultivate alternative crops or find effective and suitable wildlife-proof storage options.
- Community-based institutions may be facilitated by SFDs through wildlife experts/organizations in motivating, training and hand-holding communities in the use of exclusionary measures to ensure that these measures are effective and wildlife-friendly.

#### 4.8 SUPPORT LOCAL POPULATION BY PREVENTING ACCIDENTAL ENCOUNTERS WITH BEARS

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SFDs may facilitate and encourage local NGOs, volunteers and other stakeholders to implement safety measures, aiming at preventing human–bear encounters.

- These measures may include guiding humans in watching for signs of bear presence and in responding when they encounter a bear.
- Briefing of vulnerable groups can be done, including workers of crop fields/tea or other plantations, before every work season about the bear risk and safety issues.
- Regular training programmes may be organized in local schools and colleges and possibly during village meetings at HBC hotspots to train humans in safety measures.
- Safety audits<sup>9</sup> may be conducted each year, if feasible, to ensure that all members of the community act responsibly in case of HBC and to facilitate inter-agency cooperation.

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<sup>9</sup> Security audit audit is a process for evaluating the effectiveness and wildlife-friendliness of the safety measures in place from both the human and wildlife safety viewpoints. Its primary purpose is that people act responsibly and comply with norms and guidelines.

#### 4.9 SUPPORT THE LOCAL COMMUNITY WITH CROP PROTECTION AND GUARDING METHODS

Guarding crops from any wildlife-safe structures is one of the most effective early warning and deterrent techniques. Crop-guarding involves deterring bears by driving them by making a noise (i.e., shouting, beating drums or tins) and using dogs to frighten them. The following measures are envisaged:

- Community PRTs and farmer groups may be engaged to ensure that besides preventive measures, traditional crop-guarding methods are also encouraged, with the active involvement of the local community/farmers.
- Awareness building and training may be carried out on the effective and wildlife-friendly usage of visual, auditory and olfactory deterrents so that no harm befalls the bears.
- Farmers may be supported to adopt communal/cooperative crop-guarding measures through various incentive mechanisms and subsidized funding under district schemes (such as MGNREGS).
- A compendium on good practices on crop-guarding techniques may be developed for the use of communities.

#### 4.10 ADDRESSING ZONOTIC AND OTHER EMERGING DISEASES, TAKING A ONE HEALTH APPROACH<sup>10</sup>

Response teams and other stakeholders at HBC hotspots are vulnerable to a variety of zoonotic diseases that can be transmitted from domestic animals and wildlife to humans and from humans to domestic animals.

- Veterinary capacities and infrastructure may be upgraded to facilitate disease-monitoring in wildlife populations, to conserve wildlife and to prevent zoonotic diseases from spreading to livestock and human populations.
- A well formulated Wildlife Health Management and Disease Surveillance Plan may be developed at every forest division/PA.
- All personnel involved with capture operations may be trained, vaccinated and equipped.
- The basic approach is to integrate the concept of One Health<sup>11</sup>, which links human and animal health in a shared environment into all such operations and HBC mitigation measures in the field.

<sup>10</sup> The One Health approach is a collaborative, multi-sectoral and trans-disciplinary approach to prioritize zoonotic diseases of greatest concern that should be jointly addressed by the human, animal and environmental health sectors, working at the local, regional, national and global levels with the goal of achieving optimal health outcomes.

<sup>11</sup> One Health is a collaborative, multi-sectoral and trans-disciplinary approach—working at the local, regional, national and global levels—with the goal of achieving optimal health outcomes, recognising the interconnection between people, animals, plants and their shared environment.

## 5. ADDRESSING THE EMERGENCY SITUATIONS ARISING DUE TO HBC

Emergency situations<sup>12</sup> are to be promptly handled to ensure reduced vulnerabilities to both humans and bears.

An indicative list of the potential emergency situations, listed in decreasing order of priority, is provided here:

- Bear activity has caused injury to or the death of a person.
- Bear activity has caused damage to property.
- A bear has interacted aggressively with livestock.
- A bear has entered a building inhabited by humans.
- A bear has been injured or died due to retaliatory actions by humans, or a bear has fallen into a well or deep ditch.
- Crops have been damaged by bear-foraging.
- There have been bear-sightings in the vicinity of agricultural lands/settlements/livestock night-shelters, which have created panic among humans.

Key response procedures are to be established and actions promptly implemented/undertaken for addressing emergency situations.

The key emergency response procedures include the following:

### 5.1 ESTABLISHMENT OF EMERGENCY RESPONSE MECHANISM

A strong institutional mechanism is required, to respond to any emergency situation arising due to HBC. This starts with the detection of the incident and proceeds to communication to the Control Room. Then information may be disseminated to the officials and staff members in the command-and-control hierarchy, including the forest department and civil administration, for initiation of appropriate response actions. The divisional forest office coordinates the action by deploying RRTs to the incident site. The field support operations are to be structured around the following key operational stages for synchronization of activities and meeting the emergency:

- Monitoring and situational awareness
- Mitigation Hub/Control Room/helplines to receive and disseminate information
- RRT/PRT personnel, veterinary team, drugs and equipment, mobility and communication facilities to address emergency situations effectively and efficiently.

### 5.2 INTRA- AND INTER-AGENCY COORDINATION AND COOPERATION

Operating procedures may be laid down in each forest division/district in line with these guidelines and in line with the institutional framework suggested under the HWC-NAP to ensure timely coordination amongst the various response teams from the Forest Department and other agencies, under the DLCC, consisting of the District Magistrate/District Collector, the police, the fire services, the Animal Husbandry Department, the Health Department, SDRF, Agriculture Department, Department of Rural Development and Panchayati Raj, paramilitary forces, and other key relevant departments and agencies, and the local community, especially panchayat leaders and community PRTs.

### 5.3 PREPAREDNESS OF RESPONSE TEAMS

- A structured mechanism may be established to deploy competent personnel in the RRTs, and to ensure periodic competencies-development measures for them, including training, role clarity and equipment. The Area of Operation of each RRTs may be fixed in such a way that facilitates timely response from the RRTs. *Supplementary Framework on Establishment and Capacity Development of HWC Mitigation Response Teams* may be referred to for composition of the RRTs and role clarity.
- Operating Procedures may be laid down in detail to ensure that the capacities and capabilities of the various response teams (Community PRTs, RRTs) are established through training sessions and other measures, including training in relation to occupational health and safety.
- Operating Procedures may be laid down with specifications to ensure that each response team is sensitised and equipped with appropriate and adequate response equipment and personal protective equipment (PPE kits), in view of the need to prevent, manage and control zoonotic diseases and pandemics effectively.

<sup>12</sup> Emergency or crisis situations can be defined as situations that are sudden, unexpected, have the potential to be serious/are serious in nature and therefore require immediate intervention in time and space, from concerned stakeholders, to minimize loss of lives and assets.



## 5.4 ACTION AT THE ONSET OF EMERGENCY OR SPECIFIC SITUATIONS

### 5.4.1 Identification of bears-in-conflict

- Bears-in-conflict can be identified by their movements within human-use area, signs (bear tracks, scats, claw marks etc.), encounters with humans/livestock, etc. The decision to declare that a bear is a grave threat will depend on the behaviour of that bear, the degree of risk to public safety and the proximity of the bear's activities to facilities or human-use areas. Before any decisions are taken, it may be ascertained that appropriate management actions have already been exhausted. If the bear poses an imminent risk to human safety and continues to visit human-use areas despite repeated hazing, it may be captured, relocated or shifted to a captive facility.
- The severity of the HBC will warrant appropriate action. However, if there is no imminent risk to human safety or property, the bear is to be left alone, to return to the forest. Bears showing "defensive" aggression are not necessarily to be treated with severe management responses such as translocation or capture. However, bears that have become habituated or food-conditioned or show "offensive" aggression toward humans are to be translocated first.
- The following steps can be taken by the field teams for identifying individual bears-in-conflict.
  - The conflict location is to be cordoned off. The area within 100 m of the incident is to be investigated, focusing on trails, kills, carcasses, waste dumps, etc. Bear footprints or tracks and other physical signs (digging signs, feeding signs) of bear presence are to be recorded and monitored.

- Camera traps and bear hair-snare stations may be deployed. The camera trap database (if available) is to be investigated and the individual identified by matching. Bears may be shortlisted on the basis of the existing database and the newly deployed camera traps.
- A post-mortem examination is to be conducted of the dead human/livestock of the HBC incident.
- DNA samples such as bear scats, saliva from kills/carcasses and hairs (wherever possible) are to be collected.
- Details of the incident are to be investigated for corroboration with the circumstantial evidence, statements of the injured person, etc.
- All potential conflict bears may be investigated by corroborating the post-mortem analysis, circumstantial evidence, frequency of capture, age and injuries on the body of the bear. Repeated incidents of any nature will help narrow down the specific bear further.

### 5.4.2 Other key response actions during and after an emergency

- Operating procedures may be laid down, in line with the other guidelines issued by MoEF&CC, for stepwise key actions, for all emergency situations, media engagement, crowd management, addressing health emergencies and post-response operation for the management of the animal. This includes ensuring the animal's health and safety during capture, transport, selection of a translocation site and monitoring the animal after releasing it safely back into the wild.

## 6. REDUCING THE IMPACT OF HBC ON THE HEALTH AND WELL-BEING OF HUMANS

The three most frequent manifestations of HBC are human injury/casualties, livestock loss and bear trapping/retaliatory killings. The following curative measures provide a framework for responses in the event of these manifestations.

### 6.1 ADDRESSING LOSS OF HUMAN LIFE/ INJURY TO HUMANS

- Part of the *ex gratia* payment may be made immediately to the victim's family/heirs, and the balance payment may be made at the earliest.
- The payments to the victim's family should be made into their bank accounts.
- In the HBC hotspots, a revolving fund may also be established, at the division-level, to ensure that funds are available for providing immediate relief to the victim's family/heirs.
- In the case of an injury as a result of an encounter with a bear, the victim needs to be immediately hospitalised and *ex gratia* payment made as per the norms of the state government.
- Professional counselling through qualified psychiatrists/health workers will be useful in helping victims recover from the effects of such traumatic incidents. The SFDs and other government agencies/institutions may organise some counselling sessions for such victims and support them as they recover from the psychological impact.
- In general, efforts are to be made for simplification of procedure for release of *ex gratia* to facilitate faster payments, to ensure timely support to the affected humans.

### 6.2 ADDRESSING CROP DAMAGE AND LIVESTOCK LOSS/INJURY

- The Ministry of Agriculture and Farmers Welfare has included crop loss caused by activities of wild animals under its flagship scheme *Pradhan Mantri Fasal Bima Yojana* (PMFBY), which can be used as an important HBC mitigation instrument.
- The process of providing *ex gratia* for crop or property loss should be transparent and simplified. Mobile apps may be used for collecting information and processing of claims from farmers, after crop losses from bear activities, to ensure that there is efficiency and transparency in the system. Experiences and success-story sharing across states can facilitate further improvements in the system.
- Farmers may be encouraged, facilitated through community-based institutions, to explore solutions such as changing cropping patterns and using non-preferred crops by bears. Site-specific studies may be conducted to find out appropriate crops that are non-palatable to bears, in collaboration with agricultural institutions.
- Collaborative efforts can be made to promote market-based arrangements for alternate crops, wherever feasible. Community Primary Response Teams (PRTs) may be engaged to facilitate this process in their respective villages/areas of operations.
- Stall-feeding of livestock in HWC hotspots may be encouraged to reduce conflict and the risk of loss of livestock due to grazing inside forests.
- A dialogue may be initiated with the insurance sector for providing insurance cover for damage due to HBC. The modalities of the programme may vary from place to place according to the assessment of the risk by the insurance companies. The feasibility of such modalities may be explored at the state level.

## 7.

# REDUCING THE IMPACT OF HBC ON THE HEALTH AND WELL-BEING OF BEARS

- All care should be taken to address the issues of animal welfare and animal rights as enshrined in the Constitution (Articles 48A and 51A(g)) and as per the statutory provisions made under the Indian Penal Code (Sections 428 and 429), Prevention of Cruelty to Animals Act of 1960 (Section 11(1)(h) and Section 11(1)(d)), Motor Vehicles Act 1978 (Transport of Animal) Rules, 2001 and guidelines issued by the MoEF&CC and Central Zoo Authority.
- The bear may be regularly monitored for signs of discomfort or stress during the entire journey by a veterinary professional.

### 7.1 MANAGEMENT OF BEARS DURING CAPTURE AND POST-CAPTURE OPERATIONS

At present, most captures of bears are carried out by trapping into cages, followed by immobilization.

- Once a bear is captured/properly immobilized, the first step is to restrain it securely in a comfortable position to maintain clear airways.
- The veterinary officer present may examine the health status of the bear and monitor its vital signs (temperature, respiration rate, blood oxygen level, pulse, colour of the mucous membrane, etc.).
- Any significant deviation from the normal physiological parameters should be dealt with immediately and appropriately.
- The captured bear may be examined carefully for any external injuries, the health condition, broken teeth or claws, ecto-parasites, etc. Appropriate treatment of any wounds may be carried out before initiating transportation.
- In case a bear has a broken limb, it may be sedated and housed in an appropriately designed cage before transportation.
- Bears may be transported in specially designed vehicles for long-distance transportation, with adequate ventilation options and free from exhaust fumes and bright sunlight. There may be a lighting facility during night, and the floor may be sound and non-slippery. Drainage should be provided to facilitate disposal of waste, etc.
- The bear may be transported in a compartment within a truck/trailer. The compartments may meet the minimum requirements of container construction, in terms of strength, stability, safety and size.
- Stops *en route* may be pre-planned and identified well in advance. The journey may be as short as possible, and the safety and well-being of the bear may be ensured.

- The bear may be regularly monitored for signs of discomfort or stress during the entire journey by a veterinary professional.
- The bear may be transported from the capture site to the release site or the rescue/rehabilitation centre following the guidelines for transportation of wild animals.
- Personnel handling and transporting the bears may be trained to avoid any accidents and consequent trauma to the bears that are being transported.
- Provisioning of feed and water during transport is to be ensured, and special care is required in the case of long-distance travel from the capture site to the release site/rescue facility.
- Water should be available at hand at all times to control possible hyperthermia of the bear during transport.

### 7.2 RELEASE ESSENTIALS

Translocation is a management technique to shift a bear-in-conflict from its active area to a suitable habitat a short or long distance away, depending on its conflict history, age, gender and habituation towards humans.

- The location for the release of the captured bear may be determined depending on the suitability of the habitat, existing abundance and density of bears and availability of water and bear food plants.
- The release site may be close to the capture site (nearest to the home range of the captured bear). Only in exceptional circumstances may the bear be released at far-off sites (>20 km). Bears may be released directly into suitable release sites (hard release).
- Bears may be monitored for any transport injuries or any other health-related issues prior to release.
- In case a bear is destined for captivity, it may be held in a fenced enclosure/kraal. This would provide chances for it to recover from the stress of transport and to get acclimatized to its surroundings at the new destination. It will also provide opportunities for monitoring it intensively and for veterinary management.
- Release sites may have proper off-loading facilities and the release is to be completed with the least possible stress to the bear.
- After a bear is released into its native habitat, its behaviour and its interactions with other bears may be monitored.

- Bears may be monitored after release for injuries, wounds, ill-health and diseases, such as nervous, locomotive or digestive disturbances, by a team of veterinary professionals, biologists and a manager during the initial period after the release.
- The health of released bears may be subjected to long-term monitoring.
- In case the bear is required to be kept in captivity, the space provided to the bear should be as per the guidelines issued by the Central Zoo Authority (CZA).
- Proper sanitation and hygiene should be maintained to avoid chances of infection or diseases.
- Adequate balanced food and water may be made available, along with mineral and vitamin supplements, according to the health status of the bear.

### **7.3 REHABILITATION OF THE CAPTURED BEAR**

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- In case where bears are brought into captivity temporarily, for the purpose of treatment of a medical condition, they may be released after treatment taking into consideration their past record in conflicts, if any.
- Bears that have a history of conflict usually carry injuries. They may not be released back into the wild as they are not only vulnerable but also highly habituated to humans and hence may need to be kept in a lifetime care facility.

### **7.4 RESCUE AND RAISING OF ORPHANED/ STRAYED BEAR CUBS-IN-CONFLICT**

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- The mother bear is very protective of her cubs. Due to certain circumstances (having been chased by humans, adverse climatic conditions, death of the mother, etc.), the cubs may sometimes be abandoned or orphaned and may require to be taken into captivity. Hand rearing of bear cubs is a highly specialized skill that requires a lot of patience and round-the-clock monitoring. It must strictly follow standard husbandry practices, as listed here:
  - A rescued cub may be raised under the guidance of a veterinary officer, while the husbandry care may be entrusted to an experienced animal keeper. The cub may be handled only by one keeper, with the full precautions of hand hygiene and sanitation of the room/enclosure in which the cub is housed followed.
  - For young cubs under the age of one year, the constant presence (24x7) of the keeper is critical, as the stress of separation can very adversely affect their survival.
  - A cub should not be exposed to other humans as it has a weak immunity at its ages and may contract diseases easily.

### **7.5 POST-CAPTURE/POST-RELEASE MONITORING OF BEARS**

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- Bio-logging is an important tool for monitoring wild animals, including bears. The following technology may be utilized effectively to monitor bears after relocation or translocation:
  - Radio-tracking through satellites or GPS, if available, may be done. Deploying collars with the 'remote drop-off option' facilitates retrieval of a collar without having to recapture the bear.
  - Radio frequency identity (RFID) microchips (PIT tags) may be used for tagging all captured (not radio-collared) wild bears before release or when they are brought to captivity.
- Ear tags may be used for easy future identification in the field.
- Deployment of a network of camera traps spread across the release location may provide useful information on the tagged bears after they are released.

## 8. USE OF LEARNINGS FROM THE GUIDELINES TO FURTHER STRENGTHEN THE INSTITUTIONAL AND POLICY FRAMEWORK RELATED TO HBC MITIGATION IN INDIA

These guidelines are expected to serve as a capacity development instrument, given that a robust and structured feedback mechanism will be put in place to document the feedback received from implementing them.

- The feedback from the use of these guidelines may, therefore, be consolidated to form the basis for fine-tuning

these mitigation measures and for understanding the capacity needs for effectively implementing the mitigation measures.

- In the long term, the consolidated feedback may also be used in further reviewing the capacity development strategies, HWC-MAPs, HWC-SAPs and HWC-NAP.

## 9. PROCESS OF DEVELOPMENT, PILOT TESTING OF THESE GUIDELINES AND CONSULTATION PROCESS

- A dedicated framework of experts (Annexe 1) was formed that consisted of representatives from government agencies, SFDs, research institutions, civil society institutions and international organizations and independent wildlife policy experts. The experts were a mix of scientists, wildlife managers, policy experts and capacity development experts.

- A common understanding was developed on the overall purpose, scope, approach and methodology<sup>13</sup>. The experts had different roles in the drafting and editing process, viz., Coordinating Lead Authors, Lead Authors, Contributing Authors and Review Editors. The Author Group worked on developing these guidelines between July 2019 and August 2021, during which period they consulted a larger group of experts and stakeholders via workshops, meetings and consultations. The authors reviewed the documents and guidelines available from the MoEF&CC and different states, and relevant information and recommendations were brought into the new document. The National Technical Group (NTG), consisting of experts from MoEF&CC, Wildlife Institute of India (WII), *Deutsche Gesellschaft für Internationale Zusammenarbeit* (GIZ) and independent

wildlife and policy experts, was formed for the overall steering and facilitation of the process. A 'Working Group on Pilot Implementation of Guidelines and HWC-NAP' was formed to facilitate the planning and implementation of the pilot testing, consultations and final editing of the draft guidelines and HWC-NAP. Detailed terms of reference were provided for each category, and meetings and workshops of the Author Group were facilitated under the Indo-German Cooperation Project on Human–Wildlife Conflict Mitigation.

- The draft guidelines and HWC-NAP were pilot tested at selected HWC hotspots in India to receive feedback on the feasibility and acceptability of the recommendations expressed in the guidelines, using a structured process and tools. On the basis of the feedback received during fortnightly meetings and one-to-one consultations with managers, the draft of the guidelines was revised.
- A Committee was constituted by MoEFCC in December 2022, consisting of officials from MoEFCC, and the state forest departments of Bihar, Haryana, Karnataka, Tamil Nadu, Uttarakhand, Uttar Pradesh, West Bengal to review and finalize the guidelines.

## 10. MONITORING AND EVALUATION OF GUIDELINES

- This set of guidelines is not a static document; rather, it is a living document. It will keep abreast of the various developments in field implementation methods and wildlife research. For this, the feedback from field practitioners and other wildlife experts may be analysed to assess the specific elements and sections that need to undergo changes. A review of the guidelines is planned to take place every 5 years from 2023 onwards. However, a mid-term review

process in 2024 may be desirable. In the long term, the review cycle of these guidelines can be aligned with the review cycle of HWC-NAP.

- The mechanism, templates and guidance for collating information and feedback on the use of these guidelines may be developed.

13 Approach paper: <https://indo-germanbiodiversity.com/pdf/publication/publication19-04-2021-1618808050.pdf>

# ANNEXE 1

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Director, Wildlife Institute of India (WII)	Member
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Late Shri Ajay Desai, Wildlife Expert (June 2019 to November 20, 2020)	Member
Dr Sanjay Gubbi, Wildlife Expert, Nature Conservation Foundation (June 2019 to November 20, 2020)	Member
Dr Neeraj Khara, Team Leader, Indo-German Project on HWC Mitigation, GIZ India	Member Convenor

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Ministry of Environment, Forest and Climate Change  
Government of India  
2023