APAP Master Class on the Prevention and Mitigation of Human-Elephant Conflict

Summary report

Asia Protected Areas Partnership

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Asia Protected Areas Partnership

The Asia Protected Areas Partnership (APAP) has been designed as a key platform to help governments and other stakeholders collaborate for more effective management of protected areas in the region.

APAP was initiated in 2013 at the first Asia Parks Congress held in Japan and was formally launched the following year at the IUCN World Parks Congress in Australia. It is chaired by IUCN, International Union for Conservation of Nature, and co-chaired by an APAP member-organisation on a rotational basis. The Ministry of Environment, Republic of Korea, is the current co-chair.

The goal of APAP is to facilitate improved conservation outcomes for protected areas in Asia by:

1. Promoting best practices and innovative solutions to the challenges facing the region's protected areas, through knowledge sharing and capacity building;
2. Strengthening transboundary and regional cooperation; and,
3. Raising awareness about the multiple benefits of Asia’s protected areas, both within and outside the region.

APAP also aspires to support national and regional efforts to implement the Strategic Plan for Biodiversity, a global set of goals and targets, which has been adopted by countries around the world to halt the loss of biodiversity.

List of acronyms and abbreviations

APAP	Asia Protected Areas Partnership
DoF	Department of Forests and Soil Conservation
DoFPS	Department of Forests and Park Services
DWC	Department of Wildlife Conservation
DWNC	Department of National Parks and Wildlife Conservation
ERT	Elephant Response Team
FD	Forest Department
HEC	Human-Elephant Conflict
HWC	Human-Wildlife Conflict
IUCN	International Union for Conservation of Nature
KBNP	Kui Buri National Park
Lao PDR	Lao People's Democratic Republic
MER	Managed Elephant Ranges
MIKE	Monitoring the Illegal Killing of Elephants
MoFE	Ministry of Forests and Environment
MSR	Mirror Self-Recognition
NGO	Non-Governmental Organisation
NPA	National Protected Areas
RRT	Rapid Response Team
SMART ***(Framework)***	Specific, Measurable, Achievable, Realistic, Time-bound
SMART ***(Monitoring and reporting tool)***	Spatial Monitoring and Reporting Tool
SSC	Species Survival Commission
UNHCR	United Nations High Commissioner for Refugees
WWF	World Wildlife Fund

1 Background and introduction

The Asia Protected Areas Partnership (APAP) is a regional platform to help governments and other stakeholders share experiences and best practices on protected area management. As of March 2019, APAP country membership included 19 Members from 16 different countries across Asia, as well as two Associate Members. Under the auspices of APAP, at least one technical workshop a year is organised for member organisations.

The third APAP technical workshop, held in Bhutan in November 2017, addressed the issue of human-wildlife conflict (HWC). Attended by nearly 40 participants, including almost every APAP member country, the workshop revealed that HWC is a serious and growing problem in the Asia region. This problem is posing increasingly difficult challenges for protected area managers. Among the wide range of species involved, human-elephant conflict (HEC) has been particularly problematic.

HEC is a particular concern for protected areas management, as it occurs primarily at the edges of and along corridors between, protected areas. Ten APAP member countries are Asian elephant range states, all of which are grappling with HEC. If not addressed, HEC seriously undermines support for protected areas and wider biodiversity conservation agendas. In many places, there have been retaliatory killings and a backlash against conservation efforts.

As a direct follow-up to the workshop in Bhutan, APAP organised an intensive, four-day Master Class on HEC prevention and mitigation, in collaboration with the IUCN Species Survival Commission's Human-Wildlife Conflict Task Force and the Monitoring the Illegal Killing of Elephants (MIKE) project. The Ministry of the Environment of Japan and the European Union provided generous financial support. The Master Class was designed for mid-to-senior level officers who are responsible for leading HEC mitigation in their respective areas.

The Master Class covered a comprehensive range of topics in understanding and managing conflicts, using a combination of presentations, case method teaching and structured group discussion of prepared case studies, as well as some dedicated time for HEC project planning.

The course was organised into four sessions. The first day covered the essentials of analysing and understanding the complexities of human-wildlife conflicts, with specific focus on conflicts over Asian elephants. The second day focused on implementation methods and processes for mitigating and managing HEC. The third day involved a full-day field trip to an HEC site to facilitate discussions by applying insights gained from the first two days. The final day was set aside for participants to work on or discuss HEC cases from their countries and make use of the resource persons and other participants for specific feedback or advice.

2 Opening session

Dr Scott Perkin, Head of the Natural Resources Group of the IUCN Asia Regional Office, opened the workshop. Dr Perkin welcomed participants to the very first Master Class of its kind and presented the history of its beginnings and an overview of the four days of the APAP Master Class on HEC. He said that during the third APAP technical workshop on human-wildlife conflict, it was identified that: 1) human-wildlife conflict is widespread across the Asian region and 2) virtually every elephant range state had expressed serious concerns about conflicts with elephants.

Fig. 1: Group photo of participants © IUCN

3 Summary of sessions

3.1 Understanding human-elephant conflict

Dr Alexandra Zimmermann, Chair of the IUCN Species Survival Commission's (SSC) Task Force on Human-Wildlife Conflict, presented on HWC mitigation in theory and practice. Dr Sandeep Tiwari, Programme Manager, IUCN SSC Asian Elephant Specialist Group, gave an overview of HEC across the range. Prof Ahimsa Campos-Arceiz, Professor, Tropical Conservation Ecology and Principal Investigator of Management and Ecology of Malaysian Elephants discussed elephant ecology in HEC landscapes. Dr Diogo Verissimo, Oxford Martin Fellow, University of Oxford, spoke about the social psychology dimensions of HEC. As the

last presentation of the first day, Dr Zimmermann introduced HEC dynamics and levels of conflict.

3.1.1 HWC mitigation in theory and practice

Dr Zimmermann gave an introductory overview of challenges and concepts in HWC and outlined a framework of overarching key principles. She explained that the global challenge posed by HEC is urgent, hard to generalize and complex. She introduced key principles of effective HEC mitigation as follows: spatial and behavioural change; understanding the human social psychology; understanding levels of conflict; creating collaborative ownership and problem solving; developing effective damage control; creating value and benefit; and planning, learning and adapting.

Fig. 2: Elephants walking across the road © Alexandra Zimmermann

3.1.2 Overview of HEC across the range

Dr Tiwari presented the extent of, and key areas and initiatives related to, HEC in each country. In India, HEC leads to hundreds of human deaths each year. Conflict hotspots are often not legally managed under the protected areas network. Trans-boundary cooperation between Bangladesh, Bhutan, and Nepal is used to manage trans-boundary elephant populations.

Major conflicts are happening in the Cox's Bazar with Rohingya refugees from Myanmar. The refugee-occupied areas were originally elephant corridors; the influx of refugees has led to the isolation of elephant populations. Elephant Response Teams have been set up in the refugee camps to reduce conflict as part of an IUCN-UNHCR project and a plan to radio collar a few elephants is underway. In Bhutan, crop damage is the main cost of HEC while human and elephant deaths are relatively low compared to that in South Asian states.

Illegal trade is threatening elephants in Cambodia, Lao PDR, Myanmar, and Viet Nam. In Thailand, instances of HEC increased from 2012 to 2017 and electric fences account for a majority of elephant mortalities. In peninsular Malaysia and Borneo, elephants are threatened by habitat loss and fragmentation due to oil and rubber plantations. Elephants in China are confined within the Yunnan-Xishuangbanna, Simao and Lincang districts, with habitat shrinkage, fragmentation and degradation as major threats. In Indonesia, elephants are largely confined to Sumatra and a small population in Kalimantan. Habitat loss, degradation and fragmentation and lack of spatial plans are main threats to elephants. This has led to increasing perceptions that wildlife protection and local economic development are incompatible.

3.1.3 Elephant ecology in HEC landscapes

Prof Campos-Arceiz spoke about the biology of elephants, their spatial ecology and ecological interactions with people, as well as the ecological drivers of HEC. He noted that elephants are intelligent, sentient and social animals that play an important role in the functioning of ecosystems. Elephants are also of great cultural importance in the region.

As ecological generalist, elephants can thrive on a wide range of different food resources, but they particularly like monocots such as grass, bamboo and sugar cane and fast-growing dicots. In forest areas, elephants do not eat trees and selectively seek out palms and grasses, while they select trees in open areas. Roads are attractive to elephants as roads are the ecological equivalent of huge forest gaps with large quantities of grass. Elephants enter plantations (e.g. oil palm) because food is better and easier to find. Elephants have very large spatial requirements and there is a wide variability in home ranges, from 50 to 1,500 km^2. Translocated elephants tend to have significantly bigger home ranges. Elephants cannot stay in one place for too long because of their food requirements. There is high ecological overlap between elephants and humans, leading to competition. Prof Campos-Arceiz noted that we need to understand the details of HEC, including temporal and spatial dimensions. He also emphasised that systematic data collection is required to predict and handle HEC-related problems.

Fig. 3: © Alicia Solana-Mena, the Management & Ecology of Malaysian Elephants (MEME)


Fig. 4: © Aida Ghani, the Management & Ecology of Malaysian Elephants (MEME)

3.1.4 Social psychology dimensions of HEC

Dr Verissimo spoke about the social psychology dimensions of HEC and provided an overview of social science methods. This session started with an introduction to the Theory of Planned Behaviour, its components (e.g. knowledge, attitudes social norms, intentions) and the relationship between them. It then moved on to a discussion about the nature of qualitative and quantitative data, and the use of qualitative and quantitative data collection methods, from interviews and focus groups to questionnaire surveys. Dr Diogo also discussed the importance of sampling techniques to allow for the extrapolation of conclusions of a study from a specific sample to a larger population, and the use of specialised questioning techniques to avoid social desirability bias.

3.1.5 Dynamics and levels of conflict

Dr Zimmermann presented three levels of conflict, how to identify and work with these conflicts and ethical considerations in HWC intervention. HWC stakeholder mapping is a tool for identifying actors involved in the conflict, showing their position (e.g. supporting or opposing) and interactions with each other (e.g. links, alliances, discord/conflict). She introduced the levels of conflict with wildlife as follows: level 1 (dispute: losses in crops, livestock, income, or safety; level 2 (underlying conflict: a recurring issue not satisfactorily resolved); and level 3 (deep-rooted conflict: a recurring issue not satisfactorily resolved plus social identity or values threatened). The level of conflict can be identified by questions on perceptions about the species, situation, and the history of attempts to solve, willingness to engage to find solutions, and perception about others. Dr Zimmermann noted that the three circles of negotiation, i.e. substance, relationship, and process, should be balanced and ethical aspects should be considered as well. She summarised that conflict can be analysed by stakeholder mapping, levels of conflict and circles of negotiations, and mitigated by working with the levels of conflict, stakeholder dialogues and conflict negotiation.

Fig. 5: Small group discussions during Day 1 © Minsun Kim, IUCN

3.2 Implementing human-elephant conflict mitigation

Dr Zimmerman began the session by giving a presentation about stakeholder dialogue, mediation and conflict negotiation. This was followed by a presentation by Dr Verissimo, who talked about social marketing and behaviour change. Dr Joshua Plotnik, Assistant Professor of Psychology at Hunter College, City University of New York and Founder and Executive Director of Think Elephants International, spoke about elephant behaviour and cognition. Dr Tiwari gave a presentation on HEC damage interventions and spatial planning and Prof Campos-Arceiz presented on financial instruments and compensation. Dr Verissimo spoke about theories of change and monitoring and evaluation. Mr Say Lin Ong, MIKE Sub-regional Support Officer, Southeast Asia, presented an overview of the site visit programme for the following day, followed by an overview of Kui Buri National Park presented by Mr Pairoj Intanachijui, General Administration Staff of Kui Buri National Park.

3.2.1 Stakeholder dialogue, mediation and conflict negotiation

Dr Zimmermann discussed mapping the dynamics of involved parties and the key principles and approaches to conflict resolution and negotiation. She introduced solutions to address HEC at different levels. In addressing level 1 conflicts (disputes), mitigation aims to find practical solutions through consultation and village meetings, among others. For level 2 conflicts (underlying conflict), mitigation aims to build relationships through stakeholder dialogues. To address level 3 conflicts (deep-rooted conflict), mitigation aims to reconcile clashing identities through reconciliation dialogues and conflict transformation. She also discussed the difference between mediation and negotiation. Accordingly, mediation is a process where two parties settle a dispute through a neutral third party. Negotiation, on the other hand, is distinct from mediation as the parties involved have a stake in the process. Dr Zimmermann noted that, in conflict negotiations, it is important to move from “positions” to “interests” and to reframe the conflict.

3.2.2 Social marketing and behaviour change

Dr Diogo discussed the determination and implementation of behaviour change strategy. He explained that social marketing seeks to develop and integrate marketing concepts with other approaches to influence behaviours that benefit individuals and communities. The steps in social marketing development are as follows: setting goals and Specific, Measurable, Achievable, Realistic, Timely (SMART) objectives; analysing situation and influencing factors; understanding target audiences; developing exchange propositions; and selecting marketing interventions. Dr Diogo also introduced key principles in behaviour change, namely: change is hard; knowledge does not directly determine behaviour; change is mostly gradual; people are not islands; specific call to actions are effective; benefits must outweigh costs; and the importance of empathy. He noted that ethical aspects should be considered in behavioural change.

3.2.3 Elephant behaviour and cognition

Dr Plotnik spoke about elephant behaviour and cognition, including elephant decision-making behaviour, social behaviour, foraging and sensory perception based on experimental research. He explained that elephants have demonstrated self-awareness, complex cooperation and flexible decision-making. Asian elephants have shown Mirror Self-Recognition (MSR), which suggests that they are self-aware – an attribute which is often linked to empathy. Empathy may play an important role in HEC mitigation by drawing attention to the elephants' perspectives, behaviour and needs. Based on experiments looking at how elephants use visual, acoustic and olfactory information, Dr Plotnik believes that many of the decisions that elephants make about food and water may be based on what they smell. He explained that most available HEC mitigation options have been based on fear conditioning (e.g. deterrents, fences, etc.). However, fear has often not worked in deterring elephants. This is largely because scaring elephants away from conflict does not address the elephants' underlying interests and needs for high quality food and movement across landscapes, among others. Dr Plotnik also stressed that elephants learn how to overcome mitigation strategies and should be considered as an important stakeholder in HEC mitigation.

3.2.4 HEC damage interventions and spatial planning

Dr Tiwari spoke about designing interventions tailored to local elephant behavioural ecology and landscape factors. He also compared damage-reduction interventions. He said that it is important to look at HEC from multiple angles, including human welfare and elephant conservation angles. As elephants are often outside protected areas, passage plans are important to ensure that elephants are able to use the landscape safely even when the actual area is not legally protected. Dr Tiwari mentioned that managing electric fences is important because time and budget can be potentially wasted if electric fences are not managed properly and elephants become conditioned not to fear such barriers. Maintaining the tolerance of communities is just as important as deploying and maintaining deterrent mechanisms. Crop for crop relief is being introduced in some areas instead of distributing cash whenever there is crop damage. Cash *ex-gratia* distribution often becomes misused or spent for other purposes. Transboundary cooperation in HEC is required as poachers also come from neighbouring countries.

3.2.5 Financial instruments and compensation

Prof. Campos-Arceiz discussed the financial instruments and compensation mechanisms that can help mitigate HEC. The talk reviewed the benefits and challenges related to various financial instruments such as compensation, insurance and performance payments. He mentioned that financial instruments can help increase tolerance of conflict by distributing the cost more fairly across stakeholders. However, he also mentioned that they can be difficult to implement due to the low predictability and the wide range of damage severity. Accordingly, compensation schemes can be divided into ex-post and in-advance compensation based on when the payment

is made. Ex-post compensation is suitable when the damage is not predictable. In-advance compensation, on the other hand, is recommendable if the damage is predictable and the scheme is expected to run for some time. Prof. Campos-Arceiz explained that successful compensation schemes have the following core elements: quick, accurate verification of damage; prompt and fair payment; sufficient and suitable funds; site specificity; clear rules and guidelines; and measures of success. Based on a case study from Xishuangbanna, China, Prof. Campos-Arceiz proposed several components for equitable and sustainable compensation schemes namely, incorporating the spatial heterogeneity of HEC risk and crop value in premiums and pay-outs and cost-sharing mechanisms across stakeholders.

3.2.6 Theory of change and monitoring and evaluation

Dr Verissimo spoke about the use of theories of change, logical frameworks and monitoring and evaluation. Steps for monitoring and evaluation were described as follows: identifying goals; selecting indicators; choosing sources of information and data collection tools; defining design and sampling; and analysing data and reporting results.

In identifying goals, the clarity of each goal is important. For example, “to reduce the mortality of elephants due to HWC by 50% over 3 years” is a better goal statement than the statement “to conserve elephants”. In selecting indicators, the logical pathway includes inputs, strategies, outputs, outcomes, and impact. IUCN’s Integrated Tiger Habitat Conservation Project was introduced as an example to discuss theory of change. A number of different survey sampling methods were introduced, such as simple random sampling, stratified random sampling, systematic sampling, quota sampling, convenience sampling and snowball sampling.

3.2.7 Overview of site visit programme and Kui Buri National Park and HEC measures

Mr Say Lin Ong, the Southeast Asia Sub-regional Support Officer for the Monitoring the Illegal Killing of Elephants (MIKE) programme, presented the next day’s schedule for visiting Kui Buri National Park (KBNP). He explained that the site visit had been organised to learn about the HEC mitigation measures being implemented in KBNP, including the formation of an Elephant Response Team (ERT). Following on from Mr Ong’s presentation, Mr Pairoj Intanachitjui, General Administration Staff of KBNP, presented an overview of KBNP and its HEC measures. KBNP has a total area of 969 $km^{2.}$. It was designated as a national park in 1999 and is home to at least 237 wild elephants. There are three approaches to HEC mitigation in KBNP: (1) monitoring and guiding elephants back to the forest; (2) improving wildlife food sources such as grasslands, salt licks and water reservoirs; and (3) promoting partnerships with relevant governments, private organisations and farmers.

3.3 Synthesis and APAP Member HEC case studies

Prof. Campos-Arceiz chaired this session, in which APAP Members were invited to give presentations about HEC in their respective countries and to design/propose future HEC mitigation initiatives. Participants were requested to focus on the following questions:

1. What is the precise goal of the proposed HEC mitigation initiatives?
2. Who are the stakeholders for HEC? and
3. What is the level of conflict for HEC?

3.3.1 Bangladesh

Mr Hoq Mahbub Morshed, Mr Abu Naser Md. Yasin Newaz and Mr A.K.M Ruhul Amin from the Forest Department gave the presentation. The overall goal for their HEC initiatives was coexistence of humans and elephants. Their work on HEC focused on three areas: the northern side in the border between Bangladesh and India (level 3 conflict); the south-eastern side in the border between Bangladesh and Myanmar (level 3 conflict); and other areas including the northern part of Cox's Bazar district (level 1 conflict). Different stakeholders engaged in HEC were identified in the respective areas.

3.3.2 Bhutan

Mr Yeshi Yangdon, Ms Tshering Nidup, and Mr Rin Dorji from the Department of Forests and Park Services (DoFPS) gave the presentation for Bhutan. They explained that HEC is one of the significant issues and challenges to consider when balancing between conservation and safeguarding the livelihood of communities. They introduced HEC prevention and mitigation measures, including: using indigenous preventative measures and deterrents; establishing an Elephant Conservation Committee and a crop insurance scheme; and using solar electric fencing and Smart Green Infrastructure. The goal for their HEC programme is to improve human and elephant coexistence. Stakeholders engaged in HEC are the DoFPS, communities, local government units and NGOs. The level of HEC conflict was identified as level 2.

3.3.3 Cambodia

Mr Hout Pisith, Deputy Director of PA-East of the General Directorate of Administration for Nature Conservation and Protection, gave the presentation for Cambodia. The goals for their HEC initiatives included: increasing the elephant population; ensuring elephant health; increasing the wildlife population; decreasing land encroachment; and improving local livelihoods. Activities to achieve these goals included: raising awareness within villages and schools; zoning within two protected areas; boundary demarcation of four protected areas; improving livelihoods for villagers; and capacity building for rangers. Stakeholders include the Ministry of Environment, the Provincial Department of Environment, NGOs, local authorities,

the private sector, local communities, and donors. The level of conflict was described as level 1.

3.3.4 China

Prof. Shi Kun, from the Wildlife Institute of Beijing Forestry University, gave the presentation for China. The elephant population in China is estimated to be around 300 individuals. HEC has become severe due to the increasing population and range as well as decreasing habitat areas. The goals for their HEC initiative were to ensure that: the Asian elephant population is stable; HEC is mitigated and reduced; local communities' livelihoods are improved; and harmonised relationships among stakeholders are achieved. Stakeholders for HEC include local residents, rubber plantation companies and related farmers, governments, tourism enterprise, nature reserves, research organisations, NGOs, media, the public, and the boundary control army and forestry police. The level of conflict was identified mostly as level 1.

Mr Shi introduced some actions taken to conserve elephants such as building national and local-level nature reserves, implementing ecological projects and cooperating with Lao PDR and Myanmar. He also introduced a number of activities that are being planned for the future, as follows creating nine nature reserves and ecological corridors to link key habitats; preventing and compensating for HEC; establishing the Asian Elephant Monitoring Research Centre and the Centre for International Cooperation and Communication on Asian Elephant Conservation; enhancing monitoring of wild populations; and seeking financial resources.

3.3.5 India

Mr Maria Christu Raja D, Deputy Conservator of Forests, Virajpet Division, Karnataka and Ms Purabi Mahato, Assistant Divisional Forest Officer, Midnapore Division, West Bengal, gave the presentation for India. Mr Christu Raja D described the level of HEC in Kodagu as between level 1 and 2. Stakeholders relevant to HEC in Kodagu were identified such as the Forest Department, coffee corporations, media and the public. Ms Purabi Mahato explained that the level of HEC in Midnapore is level 1. Relevant stakeholders in Midnapore include the Forest Department, the Joint Forest Management Committee (JFMC), NGOs and media.

3.3.6 Lao PDR

Mr Savanh Chanthakhoummane, Director of Protected Areas Management of the Department of Forestry, gave the presentation for Lao PDR. The goal of the HEC initiative was for Nam Phouy National Protected Areas (NPA) to be well-managed and conserved and to solve HEC through coordination of all stakeholders by 2025-2030. Various activities to achieve these goals were implemented. These included law and regulation dissemination, patrolling and enforcement, land use planning and land allocation. Relevant stakeholders for HEC were

identified as: the Provincial Agriculture and Forestry Office; the Provincial Military; the District Office; the Provincial National Protected Area Management Office; the District Agriculture and Forestry Office; village clusters; village offices; local communities; and World Wildlife Fund (WWF). HEC was observed to be at levels 1 and 2. A number of projects to manage HEC issues in different protected areas were briefly introduced. Transboundary conservation in HEC is necessary in Lao PDR as it is adjacent to five other countries.

3.3.7 Malaysia

Dr Sen Nathan, DVM Assistant Director, Sabah Wildlife Department and Mr Jibius bin Dausip, Senior Ranger of Sabah Wildlife Department, gave the presentation for Sabah State of Malaysia. Dr Nathan explained that 20 per cent of Sabah's land area is under oil palm plantation, accounting for 10 per cent of total global supply. The three Managed Elephant Ranges (MER) in Sabah State are Lower Kinabatangan MER, Tabin MER and Central Sabah MER. Palm oil plantations are located near all three of these MERs.

Dr Nathan introduced the Sabah Elephant Conservation Action Plan 2018-2027. According to this action plan, the goal for the HEC initiative was to create sustainable landscapes to support free-ranging, breeding populations of elephants. Stakeholders for HEC were identified as being the government, media, NGOs and opposition political parties, among others. Dr Nathan expressed his view that assigning a level of conflict can be subjectively biased. Several actions to minimise HEC were proposed as follows: improving land-use planning and practices; improving conflict mitigation approaches; carrying out and implementing findings from scientific researches; improving communication between stakeholders; increasing education and awareness activities; and developing sustainable financing mechanisms for elephant conservation programmes.

3.3.8 Myanmar

Mr Vanlal Enga, Park Warden of She U Daung Wildlife Sanctuary, Nature and Wildlife Conservation Division of the Forest Department gave the presentation for Myanmar. HEC hotspots were identified as follows: Thabeikgyin and Thazi (Mandalay); Tharbaung, Ngapudaw and Pathein (Ayeyarwady); Helgu andTaikyi (Yangon); Gwa, Buthidaung and Maungdaw (Rakhine); Kyaukdaga and Tharyawady (Bago); and Taninthayi Region. Habitat loss, fragmentation and degradation, illegal killing, capture and trade in elephants and their parts are the main causes of HEC in Myanmar. The goal for their initiative was to reduce HEC in Myanmar. Relevant stakeholders were identified as protected areas staff, the Forest Department, Myanmar Police Force, Forest Police, NGOs and other civil society organisations and local people. The level of conflict was identified as level 1.

3.3.9 Nepal

Mr Ashok Kumar Ram, Assistant Conservation Officer of Parsa National Park, Department of National Parks and Wildlife Conservation (DNPWC), gave the presentation for Nepal. Nepal has 107-145 elephants in 19 districts in four isolated populations. The goal for their initiative was to ensure reduction of HEC by 25 per cent in the next 10 years, and for habitats to be restored within the next 15 years. Strategies to achieve these goals were introduced as follows: strengthening the buffer zone development program inside protected areas and community forests user groups; strengthening multi-stakeholder and transboundary coordination; collaborating with local and state governments; research and documentation; and developing site and state specific mitigation measures. Stakeholders included the Ministry of Forests and Environment (MOFE), DNPWC, Department of Forests and Soil Conservation (DOF), Nepal Army, Nepal Police, the Intelligence Department, and conservation partners, among others. The conflict was described to be at levels 1 and 2.

3.3.10 Sri Lanka

Mr D. M. B. M Bandara of the Forest Department (FD) and Mr D. P. Siyasinghe of the Department of Wildlife Conservation (DWC) gave the presentation for Sri Lanka. The goal for their initiative was to reduce HEC in Kurunagale District, an HEC hotspot, by 25 per cent in the next three years. Stakeholders for HEC included media, politicians, investors, private sector, community, district authorities, NGOs, the Defence Department, DWC, FD and tourism authorities. Media in Sri Lanka slightly favour the conservation of elephants rather than being neutral or against it. The level of conflict was identified as level 1. Proposed HEC mitigation measures included the installation of electric fences at ecological boundaries and the establishment of an Elephant Control Unit/Elephant Response Team. It was explained that DWC provides material and in-kind support to build village fences and that villagers contribute towards the construction and maintenance of electric fences. DWC, villagers and the local administrative body conduct regular meetings to ensure that fences are functioning, and human lives are secure.

3.3.11 Viet Nam

Dr Pham Huu Khanh, Head of the Science and International Collaboration Department of Cat Tien National Park, Mr Nguyen Sy Quoc, Scientific Department Officer of Pu Mat National Park, and Ms Nguyen Thi Mai, Wildlife Programme Officer of Humane Society International, gave the presentation for Viet Nam with a focus on Dong Nai Province. The key HEC hotspots in Viet Nam are Nghe An/Ha Tinh, Daklak and Dong Nai provinces. The goal for their proposed initiative was to control HEC and prevent elephant mortality as well as human injury and death by reducing damage by 50 per cent. HEC stakeholders were identified as follows: local authorities; media; protected area authorities; farmers' associations; youth unions; women's associations; NGOs; local people who are against elephants and the reallocation of land use

rights; the private sector; universities and institutes; and Rapid Response Teams (RRT). The level of conflict was analysed as level 2.

An overview of HEC in Dong Nai province was given. Under the National Action Plan on Elephant Conservation from 2014 to 2020, key activities for HEC prevention and mitigation were shared. These include: training rangers by MIKE; establishing a Rapid Response Team (RRT); establishing solar-powered and electric fences; Spatial Monitoring and Reporting Tool (SMART) monitoring; construction of water ponds and provision of salt lick points; raising awareness of local communities; monitoring elephants with camera traps and building watching towers; and ensuring cooperation from stakeholders.

3.4 Conclusions, discussions and next steps

Dr Zimmermann gave a presentation on further resources and information on HEC. The IUCN Species Survival Commission's Human-Wildlife Conflict Task Force (IUCN SSC HWC TF) was established in 2016 to support the IUCN SSC network in addressing HWC by providing interdisciplinary guidance and expert support. The HWC resource library was introduced (www.hwctf.org/resources/document-library). The library contains scientific research carefully selected by the Task Force according to the key topics and species. Brief guidelines on HEC and the IUCN SSC Guidelines for Best Practice in Human-Elephant Conflict Mitigation (in preparation) were introduced. Dr Zimmermann also informed participants about the International Conference on Human-Wildlife Conflict and Coexistence to be held from 1 to 3 April 2020 in Oxford, United Kingdom.

Dr Perkin explained that APAP is assisting with the translation of IUCN publications and best practice guidelines on protected area management; this activity could be extended to the translation of brief guides on HEC.

4 Closing session

Dr Perkin closed the four-day workshop and expressed his gratitude to the workshop participants and organisers. He thanked MoEJ and the European Union (through the MIKE programme) for providing the funding support that had made the workshop possible. He also expressed his appreciation to the Department of National Parks, Wildlife and Plant Conservation of Thailand for hosting the field trip at Kui Buri National Park.

A workshop evaluation by the participants followed.

Annex I: Agenda

Day 1 (Tuesday, 12 February): Understanding Human-Elephant Conflict (HEC)

Time	Activity
08:30	Registration
09:00	**Opening remarks** *Dr Scott Perkin, Head, Natural Resources Group, IUCN Asia Regional Office*
09:05	Self-introduction by participants
09:20	**HWC mitigation in theory and practice:** introductory overview of the topic, challenges and concepts in HWC; outline framework for the overarching key principles. Overview and structure of the course over the next few days *Dr Alexandra Zimmermann, Chair, IUCN SSC Task Force on Human-Wildlife Conflict*
09:50	**Overview of HEC across the range:** extent, key areas, hotspots, and initiatives, range-wide general overview. Group discussion of participants' HEC sites/cases. *Dr Sandeep Tiwari, Programme Manager, IUCN SSC Asian Elephant Specialist Group*
10:45	Coffee break
11:00	**Elephant ecology in HEC landscapes:** biology of a mega-herbivore, elephant foraging, spatial ecology, ecological interactions with people and ecological drivers of HEC. Research approaches to study/monitor elephant behaviour and ecology. *Prof. Ahimsa Campos-Arceiz, Professor of Tropical Conservation Ecology and Principal Investigator of MEME (Management and Ecology of Malaysian Elephants), University of Nottingham Malaysia*
12:30	Lunch
13:30	**Social psychology dimensions of HEC:** understanding essential aspects of human dimensions, such as community behaviour, values, beliefs, social norms; brief overview of social research methods. *Dr Diogo Verissimo, Oxford Martin Fellow, University of Oxford*
15:00	Coffee break and group photo
15:30	**Dynamics and levels of conflict:** understanding the social, cultural, economic and political dimensions; the three levels of conflict, how to identify and work with these, ethical considerations in HWC intervention *Dr Alex Zimmermann*
16:50	Day closing comments *Dr Scott Perkin*

Day 2 (Wednesday, 13 February): Implementing HEC mitigation

Time	Activity
09:00	**Stakeholder dialogue, mediation and conflict negotiation:** mapping the dynamics of involved parties, key principles and approaches to conflict resolution and negotiation and when to use mediatators, facilitators, or other third party interventions *Dr Alex Zimmermann*
10:30	Coffee break
11:00	**Social marketing and behaviour change:** determining and implementing the design of a behaviour change strategy, conservation marketing, and community, how to influence positive change. *Dr Diogo Verissimo*
12:30	Lunch
13:30	**Elephant behaviour and cognition:** elephant decision-making behaviour, social behaviour, foraging and perception. How understanding of elephant behaviour and intelligence could inform HEC mitigation. *Dr Josh Plotnik, Assistant Professor, Hunter College, City University of New York & Founder and Executive Director of Think Elephants International*
14:30	**HEC damage interventions and spatial planning:** design of interventions tailored to local elephant behavioural ecology, and landscape factors; comparative review and discussion of damage-reduction interventions, including the most common barriers and deterrents. *Dr Sandeep Tiwari*
15:30	Coffee break
15:45	**Financial instruments and compensation:** comparative review and discussion of options, limitations, risks and benefits, key considerations and discussion of examples. *Prof Ahimsa Campos-Arceiz*
16:30	**Theory of change and monitoring and evaluation:** logical frameworks and theory of change approaches to planning an effective strategy and assembling the right combination of resources and expertise. Monitoring and evaluation for HEC projects. *Dr Diogo Verissimo*
17:45	**Overview of Thursday's site visit schedule and logistics** *Mr Say Lin Ong, MIKE Sub-regional Support Officer, South-east Asia*
18:00	**Overview of Kui Buri National Park and HEC measures** *Mr Pairoj Intanachitjui, General Administration Staff of Kui Buri National Park*
18:15	Day closing comments *Dr Scott Perkin*

Day 3 (Thursday, 14 February): Field Visit to Kui Buri National Park

Time	Activity	Comments
7:30	Travel from Bangkok to Kui Buri National Park	Stop at the gas station en route KBNP (about 10:30)
12:00	Lunch	Huai Luek ranger station
13:00	**Welcoming address** *Mr Thussanad Pachkong, Superintendent of Kui Buri National Park*	Huai Luek ranger station
13:05	**Evolution of HEC mitigation measures** **Understanding the work of the Elephant Response Team (ERT)** **Understanding the HEC mitigation measures being implemented on the ground**	Huai Luek ranger station & HEC hotspots in KBNP
16:00	**Discussion:** Feedback from participants to Kui Buri National Park	Huai Luek ranger station
16:30	Travel from Kui Buri National Park to Pran Buri District	
18:00	Dinner	Bann Pinkeaw

Day 4 (Friday, 15 February): Synthesis and APAP Member HEC Case Studies

Time	Activity
10:00	**HEC case work:** course participants work on presentations of their own HEC cases or national scenarios, incorporating relevant aspects from days 1-3. Feedback and discussion with resource persons and the group in preparing these, reviewing or designing HEC strategies, frameworks and ideas for regions/countries. (Participants to bring own laptop and come prepared for this with some background slides ready to adapt and work on.)
12:00	Lunch
13:00	**Presentations of HEC strategies for each country or region** as prepared above and discussion of these in the group. Discussion of national policies and strategies. *Prof. Ahimsa Campos-Arceiz (facilitating)* *Bangladesh, Bhutan, Cambodia, China, India (15 mins per country)*
14:30	Coffee break
14:45	**Presentations of HEC strategies (continued)** *Prof. Ahimsa Campos-Arceiz (facilitating)* *Lao PDR, Malaysia, Myanmar, Nepal, Sri Lanka, Vietnam (15 mins per country)*
16:30	Coffee break
16:45	**Conclusions, discussion and next steps:** summaries and discussion of existing and planned follow-up resources, ideas and opportunities. *Dr Alex Zimmermann (facilitating)*
17:45	**Closing remarks** *Dr Scott Perkin*
17:50	**Workshop evaluation:** Survey form will be distributed to all participants.

Annex II: List of participants

No	Country	Organisation	Name
1	Bangladesh	Wildlife Management and Nature Conservation Division, Chittogram	Abu Naser Md. Yasin Newaz
2	Bangladesh	Mymensingh Division, Mymensingh	A.K.M Ruhul Amin
3	Bangladesh	Cox's Bazar North Forest Division	Hoq Mahbub Morshed
4	Bhutan	Department of Forests and Park Services, Ministry of Agriculture and Forests	Rin Dorji
5	Bhutan	Department of Forests and Park Services, Ministry of Agriculture and Forests	Tshering Nidup
6	Bhutan	Department of Forests and Park Services, Ministry of Agriculture and Forests	Yeshi Yangdon
7	Cambodia	General Directorate for Administration of Nature Conservation and Protection (GDANCP)	Hout Pisith
8	Cambodia	General Directorate for Administration of Nature Conservation and Protection (GDANCP)	In Visattha
9	Cambodia	Mondulkiri Provincial Department of Environment	Prum Vibolrattanak
10	China	International Cooperation Centre, National Forestry and Grassland Administration	Rong Linyun
11	China	Professor, Wildlife Institute, Beijing Forestry University	Shi Kun
12	China	Department of Natural Protected Areas Management, National Forestry and Grassland Administration	Zhang Dehui
13	India	Ministry of Environment, Forests and Climate Change	K. Muthamizh Selvan
14	India	Virajpet Division, Karnataka State	Maria Christu Raja D
15	India	Midnapore Division, West Bengal	Purabi Mahato
16	India	Ministry of Environment, Forests and Climate Change	R. Gopinath
17	Lao PDR	Department of Forestry, Ministry of Agriculture and Forestry	Soulilath Keovilai
18	Lao PDR	Department of Forestry, Ministry of Agriculture and Forestry	Savanh Chanthakhoummane
19	Lao PDR	Department of Forestry, Ministry of Agriculture and Forestry	Sengdeuane Keo Oudom
20	Malaysia	Sabah Wildlife Department	Jibius bin Dausip
21	Malaysia	Sabah Wildlife Department	Sen Nathan
22	Myanmar	Forest Department, Ngaputaw Township, Pathein District, Ayeyawaddy Region	Pyay Phyo Aung
23	Myanmar	Park Warden of Shwe-U-Daung Wildlife Sanctuary, Nature and Wildlife Conservation Division, Forest Department	Vanlal Enga
24	Myanmar	Park Warden of Htamanthi Wildlife Sanctuary, Nature and Wildlife Conservation Division, Forest Department	Win Hlaing

25	Nepal	Department of National Parks and Wildlife Conservation	Ashok Kumar Ram
26	Nepal	Department of National Parks and Wildlife Conservation	Nabin Prakash Upadhayaya
27	Nepal	Department of National Parks and Wildlife Conservation	Narayan Rupakheti
28	Sri Lanka	Forest Department	D M B M Bandara
29	Sri Lanka	Department of Wildlife Conservation	D.P.Siyasinghe
30	Sri Lanka	Department of Wildlife Conservation	U.L Thaufeek
31	Thailand	Kui Buri National Park	Pairoj Intanachitjui
32	Thailand	Kui Buri National Park	Songsak Khocharernpon
33	Thailand	Kui Buri National Park	Thussanad Pachkong
34	UK	Elephant Family	Belinda Stewart-Cox
35	Vietnam	Pu Mat National Park, Nghe An Province	Nguyen Sy Quoc
36	Vietnam	Humane Society International	Nguyen Thi Mai
37	Vietnam	Cat Tien National Park, Tan Phu - Dong Nai	Pham Huu Khanh

Annex III: List of Resource Persons and IUCN Staff

No	Country	Organisation	Name
1	India	IUCN SSC Asian Elephant Specialist Group	Sandeep Tiwari
2	India	IUCN India Country Office	Aditya Gangadharan
3	Malaysia	The University of Nottingham Malaysia	Ahimsa Campos Arceiz
4	Thailand	IUCN Asia Regional Office	Scott Perkin
5	Thailand	IUCN Asia Regional Office	Kim Minsun
6	Thailand	IUCN Asia Regional Office	Say Lin Ong
7	Thailand	IUCN Asia Regional Office	Ann Moey
8	Thailand	IUCN Asia Regional Office	Hélène MARRE
9	Thailand	IUCN Asia Regional Office	Alessandro Badalotti
10	UK	IUCN SSC Human-Wildlife Conflict Task Force	Alex Zimmerman
11	UK	University of Oxford	Diogo Veríssimo
12	USA	Hunter College, City University of New York	Joshua Plotnik

Annex IV: Photos of the field visit in Kui Buri National Park

Participants at Huai Luek ranger station, Kui Buri National Park © Kui Buri National Park

Participants listen to the presentation on the Elephant Response Team (ERT) © Minsun Kim,

Discussion on HEC mitigation measures being implemented on the ground © Minsun Kim, IUCN

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