Workshop on Developing Adaptive Management for Mitigating Human-Elephant Conflict Across Asia

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Introduction

From March 1-7, 2011, the Centre for Conservation Research and the Smithsonian Conservation Biology Institute (SCBI) organized a study tour and technical workshop on human-elephant conflict (HEC) management in Sri Lanka. The idea for the tour and workshop originated from a meeting on elephant conservation priorities organized at SCBI and the Smithsonian's National Zoological Park in December 2009. The study tour/workshop purpose was to:

- Connect researchers and conservationists working on HEC issues in ongoing projects across the Asian elephant geographic range;
- Determine and contrast HEC causes and appropriate management across different ecological and human scenarios.
- Identify major HEC management issues and solutions to address these issues;
- Identify research priorities and develop joint and standardized research activities across participating projects for a comparative study of HEC causes and management.

Background

HEC resulting from rapid expansion of human development is the leading cause in the Asian elephant's demise (Santipiallai & Jackson 1990; Leimgruber *et al*. 2003; Sukumar 2003; Choudhury *et al*. 2008). HEC is complex. Depending on ecological and economic factors HEC manifestations can be very different across Asia (Hedges *et al*. 2006; Fernando *et al*. 2005, 2008). Thus, HEC experiences of individual researchers and managers vary widely, making it difficult to reach agreement about best strategies for managing HEC. This complexity results from variations in elephant behavior, socio-economic causes, and the wide range of traditional or contemporary mitigation techniques used. Standardized and comparative work on HEC across Asia is urgently needed to advance HEC management.

HEC was identified as the most critical issue in elephant conservation in the IUCN Elephant Action Plan of 1990 (Santiapillai & Jackson 1990). However, despite increased attention on HEC during the past two decades, government agencies that are charged with HEC management frequently lack even the most basic strategy for effectively addressing the issue. Often these departments and their wildlife managers are searching for "magic bullet" solutions that will eliminate HEC instantaneously. However, such approaches have failed to mitigate the conflict and a significant proportion of wild elephants continue to live in areas with humans. If we are successful in conserving and recovering wild elephant populations, the numbers of humans and elephants living in close proximity will continue to increase. This means conservation may result in increasing HEC and wildlife departments need to accept that successful HEC management means managing HEC risk for human and elephant populations.

Managing risk is not new to human societies. Risks such as earthquakes, floods, and hurricanes or cyclones are accepted as part of life and people develop risk management strategies. HEC also represents a manageable risk, but we need more systematic and applied research to develop the best possible management strategies. Major critical needs in HEC research include:

- Understanding elephant biology, ecology and behavior as it relates to HEC and HEC management.
- Accurately measuring HEC risk, by assessing HEC incidents and analyzing the factors causing HEC risk.
- Developing tools and techniques that allow us to effectively manage HEC and reduce:
  o Economic loss
  o Human and elephant casualties
  o Long-term negative effects on viability of remaining elephant populations.
- Implementing activities on pilot scales, assessing their performance and adapting and upscaling as appropriate.

Conducting such research and developing adaptive and comprehensive HEC management strategies will be the key to conserving wild Asian elephants in the future. This is best accomplished by pooling expertise and resources across Asia via a professional network that will facilitate information exchange and that will develop and field-test standardized research and management protocols for HEC across the region. Out study tour and technical workshop were targeted at exploring opportunities for developing such a professional network.
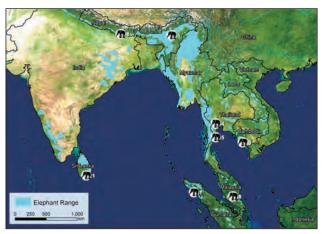

Figure 1. Location of participating projects.

Workshop participants and projects

Workshop participants came from 8 projects in 7 elephant range countries (Fig. 1), as well as several researchers and conservation biologists from conservation organization such as WWF and SCBI.

To understand HEC patterns, systematic comparative research across multiple sites in Asia is necessary. During the workshop, participants gave presentations describing their projects, focusing on the specific HEC challenges in their project and how they are addressing these challenges. We provide a brief description of the 8 projects from 7 range countries that participated in the workshop below.

Although all projects were focused on HEC mitigation or management and had similar objectives, approaches and techniques employed, as well as outcomes varied considerably.

CAMBODIAN ELEPHANT CONSERVATION GROUP: This project works in both of Cambodia's elephant strongholds, the Cardamom Mountains and the eastern plains of Mondulkiri. Though locally perceived as intense, HEC in Cambodia involves relatively few people and elephants killed over time. However, HEC is on the rise because of ongoing habitat destruction. Matthew Maltby (FFI) is collaborating with government agencies such as the Forestry Administration and Ministry of Environment as well as conservation NGOs and civil society groups to address HEC and restore wild elephant populations.

NORTH BANK LANDSCAPE (NBL), INDIA: Much of NBL has undergone large scale deforestation and significant agricultural conversion, creating some of the most intense HEC globally, with between 5-27 people and elephants killed each year. The work of Hiten Baishya (WWF India AREAS) focuses on developing rapid HEC response teams in partnership with government lined department, community members and local NGOs.

ACEH, INDONESIA: Aceh, one of the last elephant strongholds on Sumatra, is threatened

by habitat conversion. Wahdi Azmi's (FFI) work focuses on rapid response teams and the development of alternative crops and livelihoods for people.

MALAYSIA: The Management and Ecology of Malaysian Elephants – MEME – is a collaborative project by the Department of Wildlife and National Parks (DWNP) Malaysia, the University of Nottingham Malaysia Campus, and the Smithsonian's SCBI. Led by Dr. Ahimsa Campos-Arceiz, MEME focuses on developing management strategies for elephants based on the scientific understanding of elephant behavior and ecology and the human dimensions of HEC.

NEPAL: The Terai Arc is a biodiversity hotspot and a stronghold for rhino, tiger and elephants. Although elephant populations are relatively small, they are threatened by massive expansion of human populations. Dr. Narendra Man Babu Pradhan (WWF Nepal Program) is working on HEC mitigation strategies.

SRI LANKA: In Sri Lanka crop raiding is intense with high numbers of human and elephant casualties. HEC mitigation strategies include elephant drives, translocation, guarding fields, and electric fencing. Drs. Prithiviraj Fernando and Jennifer Pastorini (CCR) are assessing the effectiveness of HEC management by GPS radio-tracking elephants in collaboration with the Department of Wildlife Conservation, conducting field observations and interview surveys, and implementing community based electric fencing.

KUIBURI NATIONAL PARK (KNP), THAILAND: The site of Thailand's most intense HEC caused by habitat encroachment and the development of large pineapple plantations inside and around KNP. Wayuphong Jitvijak (WWF Thailand AREAS) is using a combination of habitat restoration inside the park and buffer zone management to reduce HEC.

SALAKPRA WILDLIFE SANCTUARY (SWS), THAILAND: SWS is Thailand's oldest wildlife sanctuary and supports 10% of Thailand's remaining wild elephant population. These elephants are threatened by human impacts on the sanctuary and often take to crop-raiding. Belinda Stewart-Cox and Jittin Ritthirat (ECN) are working to reduce HEC and improve human livelihoods.

Workshop outcomes

During the study tour, participants had the opportunity to learn about HEC conditions, and management practices on site in Sri Lanka. Probably most valuable was learning about what worked and what didn't work in HEC monitoring and management under different conditions.

The 5-day technical workshop contrasted HEC conditions and management between sites. During discussion about best next steps to advance the different HEC projects, participants decided that they needed to collect comparable baseline data on HEC intensity and people's perception of HEC across project sites. As a consequence we developed a standardized questionnaire survey that all participating groups agreed to use. The resulting questionnaire survey aims to assess links between HEC intensity and people's perceptions and conservation attitudes and is currently being field-tested. We received funding from the Association for Aquariums and Zoos (AZA) Conservation Endowment Fund (CEF) to conduct this survey during 2011.

We also decided to create an informal practitioner's network loosely called 'Elephant Conservation Group' (ECG). The purpose of ECG is to transfer and exchange technical information and experience in elephant conservation between existing and ongoing projects with a current focus on developing adaptive HEC management. The goals for ECG include:
- Increase technical capacity at our project sites through study tours, technical exchanges, and workshops with colleagues and experts from across the region.
- Develop adaptive HEC management across our sites.
- Develop and test standardized methods for assessing HEC impact and measuring effectiveness of mitigation strategies.
- Determine and contrast HEC causes and

appropriate management across our sites.

- Develop project, research, and funding strategy to expand our efforts in advancing adaptive management strategies for HEC across our project region.
- Knowledge exchange among the members of the group and transfer to other parties.

We are currently working to raise funding for the next ECG study tour and workshop. Next years meeting will be used to evaluate progress in developing baseline data for our projects, analyzing results from the surveys, and developing standardized methods to assess the effectiveness of electric fencing in reducing HEC at our 8 project sites.

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Figure 2. Group photo of first ECG study tour/technical exchange in Sri Lanka, March 2011.