Projects of the Human-Elephant Conflict Taskforce (HETF) - Results and Recommendations

Richard Hoare

PO Box A222 Avondale, Harare, Zimbabwe, e-mail:rhoare@mango.zw

HISTORY OF THE HETF

In 1996 the AfESG decided it needed to become fully involved in HEC issues and so in 1997 officially inaugurated a five person Human-Elephant Conflict Taskforce (HETF). A first phase of activities was launched in 1997 and carried out on a voluntary basis:

- An inventory of Human-Elephant Conflict (HEC) sites throughout Africa was compiled;
- A bibliography on HEC-related literature was compiled;
- Priority topics for further investigation of human-elephant conflict were identified;
- Terms of reference for the HETF were drawn up and approved at a full AfESG meeting.

At the end of Phase 1 a proposal was developed for Phase 2. The proposal was entitled "Assessing the problems and investigating the prospects of mitigating human-elephant conflict in Africa". The project obtained funding from WWF and Phase 2 involved employing consultants through IUCN to investigate the priority topics. This report briefly outlines the activities and outputs of Phase 2 in 1998 and 1999.

During Phase 2 the HETF continued to evolve around three activities which are within its terms of reference:

- linking people with an interest in and co-ordinating activities with respect to HEC,
- fulfilling a catalytic role in getting HEC related studies underway,
- providing technical advice and expertise to elephant range state governments.

CURRENT RESEARCH TOPICS

Eight studies in three categories were completed by ten consultants during the second phase of the project (June 1998 - December 1999).

Under the category heading "*Determination of significant factors in HEC*" these included:

1. The social dimensions of HEC in Africa, with special regard to an assessment of the relative importance of elephants in the spectrum of economically and socially important pest species in rural agricultural situations (Lisa Naughton, Robert Rose and Adrian Treves);
2. A survey of elephant damage in the Dzanga-Sangha area of Central African Republic (Andrea Turkalo and Ami Kamiss);
3. A crop damage survey (combined with an elephant census and assessment of seasonal elephant movements) in the Bia National Park region of Ghana/Côte d'Ivoire (Moses Kofi Sam);
4. An assessment of evidence supporting the existence and local importance of individual elephants which appear to be "habitual problem animals" (Richard Hoare).

Under the category heading "*Spatial analysis of HEC*" the following three studies were completed:

5. An assessment of the suitability of a single data collection and analysis protocol to a range of HEC sites (Richard Hoare);
6. The development of a training package for people who have no research experience, to gather AED-compatible data on HEC sites (Richard Hoare);
7. A GIS model to assess the relative importance and interaction of spatial, temporal and other factors in predicting HEC (Bob Smith and Sam Kasiski).

Under the category heading "*Control of problem elephants*" one study was completed:

8. Reviewing official existing policy options for problem elephant control measures in southern African countries and providing recommendations for directing all interested parties towards various elephant management options (Russell Taylor).

SUMMARY OF GENERAL FINDINGS

The current set of projects greatly increased our understanding of critical aspects of human-elephant conflict and improved the chances of providing effective advice on its mitigation. Specifically the following were achieved:

Determination of significant factors in human-elephant conflict

- Levels of elephant damage in subsistence agricultural communities were placed much more in context with losses from other pest species.
- The factors which make rural peoples' attitudes to elephants so hostile were identified.
- An improved understanding was gained of human-elephant conflict dynamics in the forest elephant range.
- The idea of a problem elephant sub-population was proposed and evidence for its social ecology was presented.

Spatial analysis of human-elephant conflict

- The usefulness of standardizing data collection and analysis in the study of human-elephant conflict was confirmed and a standard protocol was developed to assist local-level conflict management.
- The potential for GIS to store, analyse and present data on human-elephant conflict was made evident and its vital future role in the study of the subject was confirmed.

Control of problem elephants

- Policy vacuums on how countries officially deal with problem elephants were identified.
- Principles of how to approach the management of problem elephants were formulated.

SYNTHESIS OF THE FINDINGS

Perceived and actual elephant damage

As we now know from the study of tolerance to pests, elephants attract disproportionate levels of complaint - i.e. the perceived elephant problem often bears little relationship to the actual problem. Elephant raids are localized and unpredictable, frequently causing more damage per raid than damage from other pests. Costs of elephant raids are therefore borne individually by a few people in a community - i.e. risk is individualized. In most range states elephants tend to be perceived as a significant pest at the local level but at a larger scale (e.g. at national level) the level of threat is demonstrably insignificant. At broader spatial scales, rodents, primates and suids cause far greater agricultural losses than elephants. The potentially severe impact of problem elephants is what often shapes the attitudes of neighbouring communities to the protected areas (and often to other wildlife). This 'social dimension' of elephant problems must be regarded as very important (Table 1).

Conflict dynamics in the forest elephant range

Human-elephant conflict in African forest ecosystems has not been as widely researched as in the savannas. From the available information and literature we have begun to suspect that human-elephant conflict in forests is not as severe as in savannas. Increasing distance of cultivation from villages and the presence of secondary forest surrounding farms were identified as important factors contributing to human-elephant conflict. Fields far from villages are seldom guarded effectively while secondary forest is the preferred habitat of elephants.

It would, however, appear that contact between forest elephants and cultivated plots is more 'incidental' than in savannas, where elephants seem to display far more 'intent' in their raiding movements. This would fit with the differences in the respective physical environments: forest farms are islands in a matrix of natural forest acting as a reservoir of elephants whereas in savannas smaller elephant refuges more usually occur in a matrix of land transformed for agriculture.

As a most interesting follow-on, it seems anything which alters forest elephant distribution (e.g. logging disturbance, poaching threat, chang-

Table 1. Factors influencing local tolerance to wildlife pests (those applicable to elephants are in bold).

<<<TOLERANCE		INTOLERANCE>>>
SOCIO-ECONOMIC FACTORS		
Abundant	Land availability	Scarce
Abundant, inexpensive	Labour availability	Rare, expensive
Low	Capital and labour investment	High
Various	Alternate income sources	None
Varied, unregulated	Strategies for coping	Narrow, regulated
Small	Size of discussion group	Large
Subsistence	Type of crop damaged	**Cash or famine crop**
Community, group	Social unit absorbing loss	**Individual, household**
Low	Potential danger of pest	**High**
High	Game value of pest	**Low**
ECOLOGICAL FACTORS		
Small	Pest size	**Large**
Early	Raid timing relative to harvest	**Late**
Solitary	Pest group size	**Large**
Cryptic	Damage pattern	**Obvious**
Narrow, one crop	Pest's crop preference	**Any crop**
Leaves only	Crop parts damaged	**Fruit, tuber, grain, pith**
Diurnal	Circadian timing of raids	**Nocturnal**
Self-limited	Crop damage per raid	**Unlimited**
Rare	Frequency of raiding	**Chronic**
<<<TOLERANCE		INTOLERANCE>>>

Source: Naughton, L., Rose, R. and Treves, A. (unpubl.) The social dimensions of human-elephant conflict in Africa. A report to IUCN/SSC AfESG, Gland, Switzerland, 2000.

ing water distribution, fruiting of trees) may influence the level of this incidental contact with human settlements and therefore, potentially, the number of human-elephant conflict incidents. There is some evidence emerging, for instance, of a link between logging disturbance in forests and increased levels of human-elephant conflict incidents in cultivated gardens and plantations.

Local attitudes to wildlife authorities in forest countries are generally quite hostile and human-elephant conflict, whether perceived or actual, contributes to much of the complaint. The ability to conserve key protected areas is often so lacking in forest countries that foreign or international NGO assistance is provided on site to the Government ministry responsible. This has

led to the situation where, from the local residents' point of view, the NGO becomes the perceived management authority of the protected area. Poor relations between villagers and these NGO - assisted conservation projects, for whatever reason, compromise the objective study and mitigation of human-elephant conflict. A further problem complicating the management of human-elephant conflict in parts of central Africa is the existence of various superstitious beliefs that nocturnal elephants raiding farms can be 'transformed' people who have evil intent against the landholder.

A particularly disturbing development at the present time is evidence for the use of human-elephant conflict as a pretext for elephant poaching in the forest range. It is well known that logging and wildlife poaching activities in forests can be closely linked. Co-operation between the HETF and the CTES 'Monitoring of the Illegal Killing of Elephants' (MIKE) pilot project in central African forest sites has been initiated.

Habitual problem elephants

The study on the existence of habitual problem elephants suggests little evidence for levels of elephant problems showing density-dependence. This means that virtually any elephant population may potentially contain a problem sub-population which authorities must expect to have to manage. Unfortunately, for a number of reasons this sub-population is very difficult to identify.

It is suspected that where problem individuals are identified and either destroyed or removed, fairly rapid 'replacement' of these problem individuals may occur. This casts doubt upon the long-term effectiveness of their destruction or removal.

Study methodology in human-elephant conflict

Because of the importance of scale in both the perceived and actual level of elephant problems a hierarchial approach to data collection and analysis was proposed, so that management of

the problem can likewise be viewed from the local, intermediate and national scales. Primary data on problem elephant incidents have to be collected in the field by personnel specifically trained for this purpose. Systematic recording of these data by trained enumerators is not expensive or complicated but must be done over as much of a conflict zone as possible and for an adequate study period (minimum two, preferably three years). Local annual summaries of these data provide information on the distribution, frequency and severity of problem incidents and act as a filter for distinguishing serious from trivial cases. Options are given for ranking areas according to various criteria, e.g. (a) total numbers of elephant incursions, (b) serious incidents or (c) overall damage levels. Informed local management decisions can be made on the basis of these simple summary analyses.

All such data are geo-referenced and are therefore GIS compatible. Incident data can be supplemented with multiple layers of environmental and elephant population attributes so that more complicated analyses are possible on multiple data sets from different sites. At more sophisticated levels of analysis on multiple data sets the following should be achievable: strict delimitation of conflict zones; valid comparisons of problem severity between sites; testing of hypotheses on causal factors of conflict; production of predictor variables for conflict.

Official policies and the management of problem elephants

There is a universal desire amongst African elephant range states to afford official protection to the species, even in countries where populations are not threatened. The countries of southern Africa are generally acknowledged as having fairly comprehensive policy environments in their official wildlife management sectors. Given the longstanding duration and widespread nature of complaint about problem elephants, it is surprising that this study revealed a definite lack of pro-active policy on tackling the matter and budgeting for the costs of it in six out of seven countries in that region.

In effect, problem elephant issues are often officially dealt with on an individual case-by-case basis with a strong reliance on the traditionally easy, cheap and popular methods of disturbance shooting and shooting to kill. The long-term effectiveness of this strategy, however, is now in question. There is growing recognition of shortcomings in the policy and its implementation and central government agencies are becoming more predisposed towards devolving authority and responsibility for problem elephant management to local institutions.

Managing human-elephant conflict has to be integrated with the management objectives of different elephant populations and with other practicalities of elephant management (e.g. law enforcement, effects on habitats and other wild species, policy on utilisation schemes).

RECOMMENDATIONS

The following recommendations draw on what we have learned so far from this research and which is both new and relevant to improved elephant conservation.

Management recommendations

- Wildlife authorities will have to manage problem elephants with a dual strategy involving both the animals and the 'public relations' associated with their presence. There are strong indications that officially centralized approaches to problem elephant management are less likely to succeed than ones where some decision making is devolved to a local level.
- A decision support system (DSS) for problem elephant management needs to be created for use by wildlife authorities. This DSS may help stimulate policy formulation (even perhaps retrospectively) in those countries which do not have relevant policies on problem animals. Any DSS must specifically state its scale of application (e.g. incident

level, village level, community level, district level, regional level, national level).
- It may be better to pursue the longer term policy options of managing the problem elephant element of a population *in situ* (e.g. by land use planning, community conservation initiatives, fencing) rather than destroy a valuable resource (by frequently killing selected animals) or risk exporting the problem to another site (e.g. through translocation of individual animals).

Research recommendations

- The standardized data collection protocol should be simultaneously tested in a representative sample of human-elephant conflict sites in both the savanna and forest elephant range. The sample should include suspected high, medium and low intensity conflict sites from a range of countries with different wildlife policies and varying degrees of external support for conservation projects.
- Data from these human-elephant conflict sample sites should be input into a Geographic Information System and be processed through a range of relevant analyses in order to: compare problem severity between sites; test hypotheses on causal factors of conflict; produce predictor variables for conflict.
- In the forest range where information on elephants is especially hard to collect, conservation efforts for the species would benefit greatly from linking together data collection and analysis on numbers, distribution, illegal offtake and human-elephant conflict incidents.
- More research is required on the community-level response to human-elephant conflict including for example the following: the collective management of risk; how benefit distribution in community-based natural resource management can be linked to elephant problems.