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Managing Human Elephant Conflict – Lessons Learned

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ABSTRACT: Conflicts between humans and elephants are escalating in many parts of Africa and displacing elephants from much of their former range. The main causes and effects of these conflicts are outlined and the main management options to address the problem are discussed. For long-term management of human-elephant conflict, site-level interventions alone are unlikely to be sufficient. Action by government agencies, private sector partners, non-governmental organizations and other stakeholders is necessary and should be mutually reinforcing. All the relevant technical, economic, and socio-political issues from the conflict site level to the national level must be addressed to ensure sustainable outcomes for both people and elephants.

KEY WORDS: Africa, elephant, human-elephant conflict, *Loxodonta africana*

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INTRODUCTION

Human-elephant conflict (HEC) is a complex problem that threatens the livelihoods of many local communities in Africa, as well as the survival of African elephants (*Loxodonta africana*) and their habitats. A great deal of time and effort has been expended in recent years to find solutions to this problem. The most significant development in this respect has been the establishment in 1996 of the IUCN Species Survival Commission's African Elephant Specialist Group's Human Elephant Conflict Working Group (HECWG) comprised of volunteer members all experts in human-elephant conflict management from the four different sub-regions of sub-Saharan Africa. Since its inception, the HECWG has carried out extensive research into the spatial and temporal dynamics of HEC, and evaluated different HEC management systems and mitigation efforts across the range of the species. It has also produced a series of technical 'tools' and products to help human-elephant conflict managers to deal with "problem" elephants.

The African Elephant Specialist Group (AfESG) defines human-elephant conflict as: "*any human-elephant interaction which results in negative effects on human social, economic or cultural life, on elephant conservation or on the environment*". To understand why this problem has become more acute in recent times, it is helpful to consider that in the last 20 years the human population in Africa has almost doubled. This increase in human populations and associated activities has led to the loss and fragmentation of elephant habitats. In many places, elephants have been displaced by humans; elsewhere, elephant populations have been compressed into smaller and smaller pockets of available habitat. As a result of these developments, the *human-elephant interface* at which people and elephants come into contact and conflict with one another has greatly expanded.

CAUSES

The causes and effects of HEC are both direct and indirect and can occur at different levels from the conflict site to national and global levels. This suggests that long-

term management of the problem requires actions at all these levels. The main causes can be summarized as follows:

- **Rising levels of poverty** are at the root of many environmental problems in Africa. Human-elephant conflict is no exception. The lack of livelihood opportunities for local communities plays a key role in unsustainable utilization of natural resources. For example, impoverished farmers are forced to cultivate increasingly marginal lands leading to encroachment into elephant habitats. This creates the conditions for conflict situations to develop.

- **Land use practices** are also changing rapidly throughout Africa. For instance, nomadic and pastoralist lifestyles, often deemed more compatible with wildlife, are disappearing and displaced by more sedentary activities such as agriculture.

- Ironically, many of the **large-scale economic development programmes** that have been initiated to try to alleviate poverty have inadvertently exacerbated HEC. Roads, dams, logging concessions, irrigation schemes and other development activities often lead to further habitat degradation and encourage settlement in areas that were formerly the exclusive domain of elephants and other wildlife. While many development projects have been started or implemented by African governments, the funding often comes from international donors. In addition, many powerful multinational corporations are tapping natural resources to feed consumer demand from the north. Such activities which host governments are often unable to regulate can cause widespread environmental destruction and help contribute to the HEC problem. This *northern footprint* is expected to become even more pronounced in the future implying increased conflict between people and elephants.

- Successful conservation practices in some parts of Africa have allowed elephant populations to recover and some of these populations are now increasing at rates of 4% or higher per annum. Deprived of their traditional migration routes and increasingly confined to protected areas, or other small islands of suitable habitat, elephants

are exerting increasing pressure on their environments. Although HEC is not strictly a density dependent phenomenon, **local overpopulation of elephants** can nevertheless contribute to increased competition and conflict between people and elephants.

EFFECTS

Elephants impact negatively on local communities in many ways (e.g. by raiding crops, killing livestock, destroying water supplies, demolishing grain stores and houses, injuring and even killing people). The costs of such damage can be significant. For example, in Kaélé, Cameroon, elephants destroyed 5,093 ha of farmland in 1991-1992 with the estimated cost of more than US\$200,000 (Thouless and Tchamba 1992). The annual cost of elephant damage to infrastructure in the Kunene region of Namibia is substantial and includes damage to water tanks (~€1,700 each), windmills (~€7,000 each) and solar panels (~€7,000 each) (P. Lindeque, Ministry of Environment and Tourism, Republic of Namibia, pers. commun., 2003). Elephants often damage crops in areas where farming yields are marginal, therefore exacerbating an already tenuous food security situation (Hoare 2001). HEC is also a major drain on the resources, both human and financial, of national wildlife management authorities. This is particularly the case in some elephant range states, such as Kenya, where HEC has been given a high profile through intense coverage in local media.

In addition to such direct economic costs, there are also many “hidden” or social costs to HEC. For example, children may be prevented from going to school for fear of elephants; or the productivity of farmers, who have to stay up all night defending their crops against marauding elephants, may be reduced. Furthermore, persistent negative interactions with elephants contribute to general antagonism by some local communities towards the conservation of natural resources.

MITIGATION METHODS

Various methods have been applied in an attempt to mitigate HEC. A summary of these is provided as follows:

- **Traditional deterrent methods** (patrolling fields at night, making noise, throwing spears and stones, using fires to scare away elephants, etc.) have been widely practiced by most affected communities. In general, most of these traditional methods have been relatively ineffective in the long term because elephants quickly learn that the method causes no serious harm to them and thus, after a period of exposure, simply ignore it (O’Connell-Rodwell *et al.* 2000, Osborn 1998). There is, however, evidence that traditional methods do work to some degree since places where no self-defence is applied usually become more seriously affected (Naughton *et al.* 1999). Traditional methods are also relatively cheap, can be applied by the local communities themselves, and are not fatal to the elephants.

- **Disturbance methods** such as firing weapons near raiding elephants, using thunder flashes, flares, lights, trip wire alarms and elephant “drives” with aircraft, vehicles, and people have been widely employed by wildlife authorities across Africa. However, as is the case with

traditional methods, elephants quickly habituate to these measures. They can also be dangerous due to the proximity of elephants and generally have to be applied by trained wildlife personnel (Hoare 2001).

- **Killing problem elephants.** Killing is often seen as just retribution for problems that elephants cause, and is also very popular because it usually provides the additional bonus of free meat (Hoare 2001). When carried out by wildlife authorities, it is a relatively cheap and quick control method. Since it is popular with both wildlife authorities and affected people, killing has been widely employed as a ‘quick fix’ solution (Taylor 1993). However, although there may be some temporary decrease in elephant crop-raiding as a result of selective lethal removal, in many conflict areas problem elephants continue to be destroyed every year without any apparent overall reduction in their activity (Hoare 2001). In fact, it appears that almost any elephant population has what may be termed a ‘problem component’. As animals comprising this component are removed, others replace them, so the problem remains (Hoare 1999). Furthermore, it may be difficult to identify culprit animals with certainty, so there is no guarantee that the actual problem elephant is the one that ends up being removed.

- **Translocation** of problem elephants has been proposed as a possible alternative to killing problem elephants. However, as with killing, its effectiveness is compromised by difficulties involved in the correct identification of problem elephants and the probable replacement of the removed animal with another. It also carries with it the risk of transferring the problem elsewhere, and there is no guarantee that the translocated animal will not simply return to its former range. Furthermore, elephant translocations are extremely complex and expensive undertakings (Dublin and Niskanen 2003) and should only be attempted after careful evaluation of other options, and only if proper technical guidance is available.

- **Physical barriers.** Several types of barriers have been tried against elephants, including conventional fencing, electric fencing, trenches, moats, stone walls and buffer crops. Long-term success has however often fallen well below expectation, sometimes because of poor layout or design, but more frequently because of deficiencies in meeting the considerable demands of meticulous routine maintenance (Hoare 2001, Thouless and Sakwa 1995, World Wildlife Federation 1998).

- **Experimental repellents.** Interest in olfactory repellents against elephants has centered on capsaicin, the active ingredient in chiles (*Capsicum* spp.) that has been demonstrated to be a strong irritant to elephants. Various types of capsaicin sprays and other applications have been developed but the search for delivery technologies appropriate for rural agricultural situations in Africa continues to present challenges (Osborn and Rasmussen 1995). Recent trials using ropes smeared with chili grease are showing promising results in a few areas (World Wildlife Federation 2003).

- **Elephant alarm calls.** Researchers are also investigating whether elephant calls, which institute alarm or flight reactions, could be recorded and played back to deter problem elephants. However, this method involves

the use of complicated technology and the equipment required is very expensive (McComb 1996). Another potential obstacle is the eventual habituation by the problem elephants.

- **Compensation.** Demands for monetary compensation are often amongst the first to be made by affected communities, especially if the perpetrator is an animal that effectively belongs to the state (Hoare 2001), but recent studies of monetary compensation schemes for wildlife damage across Africa have revealed that most compensation schemes are ineffective and open to abuse (Hoare 2003). However, village-based self-insurance schemes and non-food compensation may be more sustainable, although very little information exists on the practical application of such schemes.

- **Wildlife utilization programmes.** Consumptive and non-consumptive wildlife utilization that gives local communities some control over the wildlife resources with which they coexist can be employed to help increase tolerance of problem elephants, and hence alleviate HEC. Most countries of southern Africa now have policies that allow controlled, consumptive utilization of wildlife (culling, cropping, hunting) with devolution of some responsibility for wildlife management from central government to local government or community level, and greater sharing of benefits with these lower levels (Child 1995). In fact, in many Community-Based Natural Resource Management programmes, elephants are viewed as simultaneously the most valuable assets for revenue generation and the most problematic species involved in conflict with people (Taylor 1993). The sale of problem elephants on safari hunts can help address HEC, as benefits from such hunts can be returned directly to affected communities. If non-consumptive uses of elephants (principally tourism) can be developed, this may also have enormous benefit to local communities through, for example, employment creation and revenue sharing with protected areas. However, to make such programmes succeed, complex and long-term partnerships are required between wildlife authorities, local authorities, the private sector, and local citizens. These are not easy to develop or maintain (Hoare 2001) and require clear policies on the legal and illegal use of wildlife, which usually have to be formulated at a national level. Furthermore, costs of elephant damage are always borne by individuals, whereas benefits from elephant utilization usually accrue to the wider community. Consequently, negative attitudes to wildlife can take considerable time to change even in the face of reduction in levels of conflict (O'Connell-Rodwell *et al.* 2000).

- **Land-use planning.** By attempting to accommodate elephants within prevailing and future land use plans, it may be possible to ensure co-existence between people and elephants with low levels of direct conflict (Hoare and du Toit 1999). Some land use changes that could help achieve this objective include: reducing conflict interface between elephants and people by discouraging settlement into elephant range; changing location of fields to facilitate defence against problem elephants; making agricultural production more efficient, thus reducing need to clear new areas for cultivation and modifying movement of problem elephants e.g. by creating or

securing elephant corridors, or by manipulating water supply to change elephant distribution (Hoare 2001). Many of these land use changes can be encouraged, implemented, monitored and evaluated entirely locally by dialogue and consultation between wildlife managers, local officials and affected communities. However, this is only possible in a policy environment with some legitimate form of local participation in wildlife management.

SUMMARY

Synthesizing the lessons learned from the above, and other research carried out in the past seven years, the following general conclusions can be drawn:

1. One intervention alone will never adequately take care of HEC. Instead, several very different measures may have to be employed simultaneously. An integrated package of measures produces 'synergy' and is generally more effective than the sum of its individual constituent parts. Different combinations of methods may need to be tried for each situation until a fairly successful combination is found which suits the local conditions.
2. Effective HEC management requires a strategic approach that addresses the underlying causes of crop raiding as opposed to a purely tactical approach that only tackles the symptoms.
3. Rather than viewing elephant problems in isolation, they should be seen in the context of the many other social and farming problems associated with survival in rural Africa.
4. Integrated national land-use policy and planning that includes considerations for both people and elephants can go a long way towards reducing HEC. Relatively high densities of elephants and people can co-exist if land transformation is not too widespread, and if elephants are not subjected to high levels of deliberate disturbance.
5. Problem elephant management must have strong local participation and preferably be integrated with other elephant management activities.
6. HEC managers must be supported by clear policies and legal frameworks at the district and national levels.
7. Successful long-term management of HEC requires solid support from all levels of government, strong commitment on the part of wildlife management authorities, the development and implementation of integrated land-use plans, informed use of available tools and methods, and a climate of trust between the diversity of negotiating parties on the ground.

CONCLUSION

Following from the above, the AfESG is increasingly advocating coordinated approaches at multiple scales by a broad spectrum of stakeholders to produce mutually beneficial outcomes for elephants and people. Effective long-term management of HEC needs to take a holistic approach that involves a diverse set of actors at all levels from the affected community up to the relevant policy-makers and donors at local, national, and even global levels. Appropriate actions at each of these levels are

necessary, and must be coordinated to ameliorate HEC. Such actions must take into account, not just the immediate symptoms of the problem, but also the root causes. In the long term, it is only through the synergy of the combined efforts of diverse actors at many different levels, that durable long-term management of HEC will become possible. As so many important linkages exist between the different levels, a comprehensive national human-elephant conflict system therefore needs to develop activities at all the levels and to tackle all the relevant technical, institutional, socio-political, and economic issues at each level.

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