

# Managing human–elephant conflicts: the Kenyan experience

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## Abstract

An understanding of the interaction between wildlife and people is important for conservation. If the two are to co-exist, conflicts must be minimized by decreasing the costs and increasing the benefits that come to the local communities as they interact with wildlife. In Kenya, the elephant has had the greatest effect on human activities and has led to severe human–elephant conflicts, mostly as a result of elephant habitats being fragmented and reduced. The major consequences of conflict have been an increased number of human deaths and injuries, and of elephant deaths and injuries, and habitat degradation. Kenya Wildlife Service has tried various strategies to minimize conflict and increase tolerance. Electric fencing, translocation, establishment of sanctuaries and problem-animal control activities have all been applied at various pressure points.

## Résumé

Il est important pour la conservation de bien comprendre l'interaction entre la faune sauvage et les gens. Si les deux doivent coexister, il faut minimiser les conflits en diminuant les coûts et en augmentant les bénéfices qui reviennent aux communautés locales dans leurs interactions avec la faune sauvage. Au Kenya, ce sont les éléphants qui ont toujours eu le plus grand impact sur les activités humaines et qui ont entraîné de sévères conflits hommes–éléphants, ce qui était dû, dans la plupart des cas, au fait que l'habitat des éléphants a été fragmenté et réduit. Les principales conséquences de ces conflits sont des morts et des blessures humaines en nombre croissant, des morts et des blessures d'éléphants aussi, et une dégradation de l'habitat. Le *Kenya Wildlife Service* a testé différentes stratégies pour minimiser les conflits et augmenter la tolérance. Des clôtures électriques, des translocations, la création de sanctuaires et le contrôle des activités des animaux à problèmes, tous ces moyens ont été utilisés à différents points de friction.

## The emergence of human–elephant conflicts in Kenya

The population of the African elephant (*Loxodonta africana africana* Blumenbach) has increased substantially in the past 20 years. The impact of poaching for ivory has been well described (Douglas-Hamilton 1987). Fortunately, since the ban on ivory trade and the absence of illegal commercial poaching, elephant populations have continued to increase. Hand in hand with this increase has been an increase in human population (from 8.6 million in 1962 to the current estimate of over 30 million) leading to human encroachment into dispersal areas, corridors and available ranges. Human–wildlife conflict can thus

be referred to as land-use conflict, which has become a common phenomenon in Kenya. This land-use conflict can be traced back to the early 1970s when large-scale farms were subdivided into small individual parcels. This was particularly evident in Laikipia, where lack of land-use zoning brought people and wildlife together. Other factors that have contributed to these conflicts include the collapse of the agricultural sector, especially of large-scale commercial livestock farms and the subsequent subdivision of that rangeland, climatic changes, and the present political and socio-economic environment.

When elephants live close to people, conflicts such as destruction of crops, damage to property and even loss of life are bound to occur (Bell 1984; Kiiru 1995;

Tchamba 1995). The proximity of human settlements to parks and other elephant ranges makes humans subject to conflict with elephants (Bhima 1998). A whole range of countermeasures to mitigate the problem of human–elephant conflict is required as no one system can be completely effective (Hoare 2001). In Kenya, competition between elephants and people for limited resources has intensified as elephants move out of parks and reserves in search of water and food. With lack of a national policy to deal with human–elephant conflict, it is evident that if the situation is not dealt with it could pose a threat to the conservation of Kenya's elephant population.

Figure 1 shows the major conflict zones and elephant dispersal areas in Kenya. In Kenya 79% of the land is semi-arid or arid, and there is great pressure on land with high agricultural potential. Due to agricultural development, many of the protected areas have become isolated or semi-isolated. The resulting isolation has contributed to the increase in human conflict with wildlife. The park network covers 8% of the area of the country, and a major portion of the country's biodiversity falls outside parks and sanctuaries. Most conflict zones are concentrated in the central part of the country where agriculture is the mainstay of the economy. Due to lack of a national land-use policy that has resulted in changes in types of land use, conflict incidents are increasing in the southern regions.

## Strategies used in conflict management

In its efforts to address the escalating problem of human–elephant conflict, Kenya Wildlife Service (KWS) has tried various strategies such as creating sanctuaries; sensitizing communities; using physical barriers (electric fences, vegetation barriers, moats, ditches, stone walls and high tensile fences); deterring animals through problem-animal control activities (PAC); translocating elephants; and conducting elephant drives. These strategies are discussed in detail here.

### Physical barriers

#### ELECTRIC FENCING

Kenya has over 1200 km of game-proof fences in various elephant and wildlife ranges and plans to develop another 1300 km in the future. Kenya Wildlife Service maintains three major categories: simple, intermediate and comprehensive fences. The simple fences have only

two or three strands of wire and are designed to restrict a few species of wildlife, such as elephants; the intermediate fences are multistranded and are ideal for confining a number of species in savannah ecosystems; the comprehensive fences are designed for high-potential agricultural areas and can contain 98% of wildlife species. The electric Mwea fence has been successful in reducing conflicts. It is a simple fence, which carries an average voltage of 5.5 kV. Its success is attributed mainly to the community's active participation in maintaining it and to the presence of a full-time fence attendant, whom KWS provides.

*Conflict incidents before and after fence construction.* Mwea had 48 elephants in 1995. The situation had deteriorated to the extent that some had to be translocated to Tsavo East National Park to minimize conflicts. As this alone did not solve the problem, an electric fence was identified as an option to minimize conflicts related to elephants (76% of all human–wildlife conflicts). Before its construction, most human deaths caused by wildlife were attributed to elephants with an average of three people killed yearly. Immediately after the fence was completed, incidents of human–elephant conflict plummeted (fig. 2) in number, and no elephant-related death has been reported since.

#### VEGETATIVE BARRIERS

The cactus species *Opuntia dillenii* has been tried in some parts of Laikipia and Narok. Its potential to spread as a weed, however, is a major limitation. Another species, Mauritius thorn (*Caesalpinia decapetala*), has also been tried in Transmara, albeit with little success.

#### MOATS AND DITCHES

Ditches and moats have been tried in the past in Laikipia, Mt Kenya and Aberdares. However, due to lack of proper maintenance, they have not been successful in containing the elephants in protected areas. This method is ideal only for small-scale sites of 3 or 4 km and is not recommended for high-potential agricultural areas as moats or ditches may cause considerable soil erosion. They are prone to siltation and refilling, hence costly to maintain.

#### STONE WALLS

Building stone walls has been an experiment in parts of Laikipia. This method is feasible only where stones

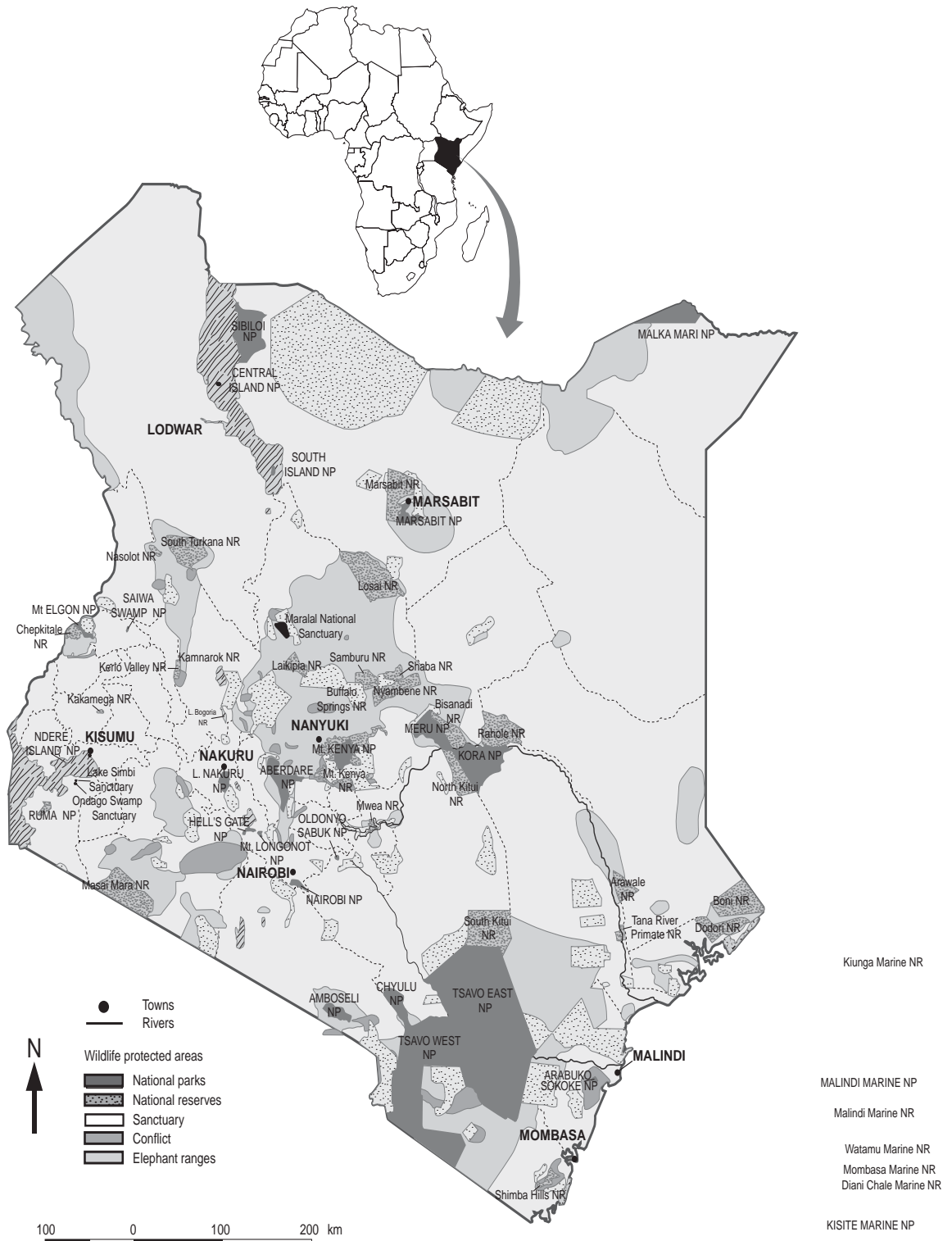


Figure 1. Elephant ranges and conflict zones in Kenya.

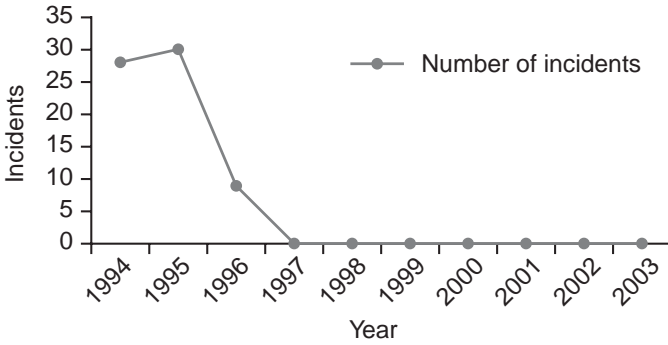


Figure 2. Human–elephant incidents in Mwea National Reserve, Kenya.

are available on site and the size of the area to be fenced is not extensive. The method is not effective for containing elephants, as they soon learn to break the wall down by removing the rocks. Stone walls are effective principally for containing gazelles, hippos and crocodiles.

**Creation of sanctuaries**

Creating a sanctuary involves delineating land outside protected areas for wildlife conservation. As a strategy in mitigating conflict, it increases the available elephant range. In addition to solving seasonal human–elephant conflicts, community wildlife sanctuaries potentially can generate revenue from eco-tourism activities for local people. Combined with fencing, this strategy envisages empowering communities economically so that they can benefit from conservation. Fifteen sanctuaries have been established in Kenya and more are being established. This strategy appears to be the best option for mitigating conflicts, particularly in areas with low agricultural potential.

**Community sensitization**

The primary objective of sensitizing a community is to lead local communities in or around wildlife conservation areas to increasingly view the elephant as a useful and manageable animal. Vigorous community conservation programmes in most ranges have been a priority, and wildlife management committees or conflict-resolution committees have been

formed. These committees become a medium for discussing conflict issues. Their members include representatives of the local community, local NGOs and the Forest Department, and provincial administrators, politicians, and local Kenya Wildlife Service wardens. Other programmes that create conservation awareness in the community are supporting local self-help groups in projects that enhance survival of the elephant and give economic and social gain, such as providing water and constructing dispensaries and schools. It is important to note that future conservation of elephants outside protected areas hinges on the support of local communities, which have long been marginalized economically.

**Problem-animal control activities**

Kenya Wildlife Service has a well-trained PAC team that specializes in driving away persistent problem or rogue elephants and other wildlife. The disadvantage of this approach has been that it risks destabilizing the social structure of the herd, which may lead to haphazard movements that even increase the chances of killing or injuring people. PAC activities have been mainly related to repulsing elephants by scaring them using

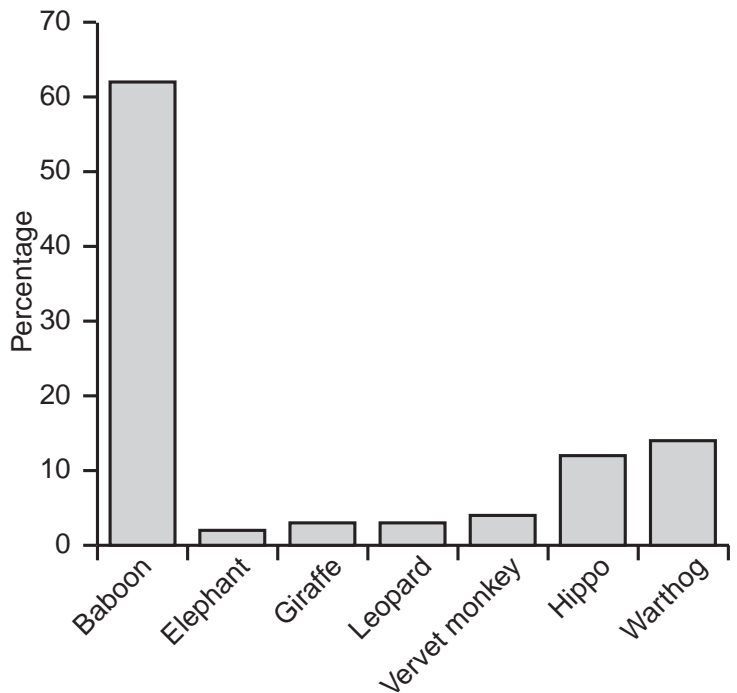


Figure 3. Conflict species reported for the year 2002 in Kenya.

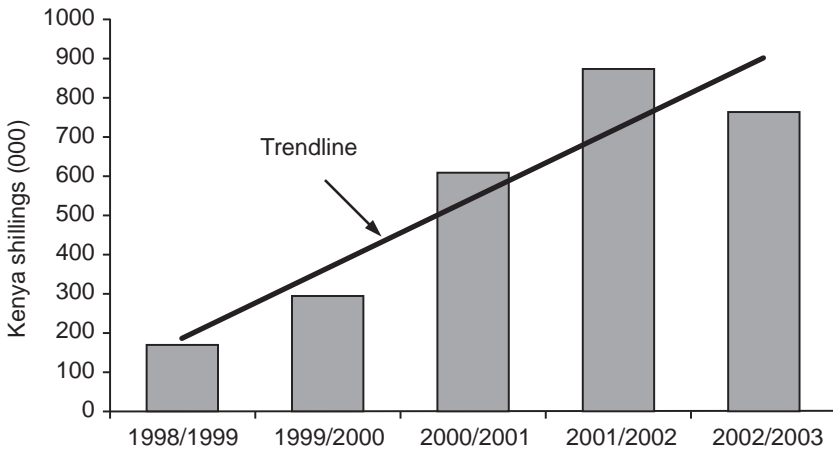


Figure 4. Expenditure related to problem-animal control activities in Laikipia District, Kenya (USD 1 is approximately 75 Kenya shillings).

blank bullets and thunder flashes. Elephants are shot only when human life is in danger and other options are not available. Most PAC activities are related to elephants, which are the leading conflict species (fig. 3), and costs involved in these activities continue to increase (fig. 4).

Kenya Wildlife Service has tried to shift its policy away from PAC activities to other management options such as translocation to manage problem elephants (fig. 5). However, in light of the ever-increasing incidence of conflicts, it has not been possible to abandon the method completely. Despite the costs involved and the deleterious effect PAC has on elephant behaviour, KWS will continue to combine it with other appropriate options as a short-term strategy to minimize conflicts.

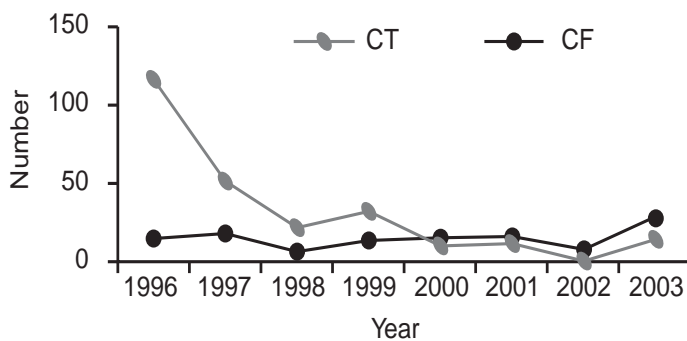


Figure 5. Elephants killed under PAC and through conflicts with local residents. CT – control, elephants shot during problem-animal control activities; CF – conflict, elephants killed or speared by local residents.

### Translocation

Translocation has been used in various elephant ranges as a conflict-management strategy as well as to minimize the habitat destruction caused by an over-concentration of elephants. For example, in Mwaluganje and Sweetwaters Rhino Sanctuary the habitat was degraded when elephants were confined by an electric fence. Most of these translocations have been carried out after intensive

pretranslocation studies have been done.

Table 1 lists some of the translocations that have been carried out to ease human–elephant conflicts in Kenya (Omondi et al. 2002).

### Elephant drives

With change in land use from pastoralism to sedentary agriculture in elephant dispersal areas, elephant drives have been employed in some ranges as a short-term strategy to minimize conflicts. The drives are normally done using a helicopter, fixed-wing aircraft, vehicles and men. The drive is carried out after the elephants have been sighted and a ground crew has established the group composition. Elephant drives have been made to ease the level of conflict in Narok-Siyapei, Kibwezi and Laikipia. This option is not feasible as a long-term strategy because of the migratory nature of elephants.

### Recommendations

- Proper land-use planning that includes zoning will make it possible to reduce the number of conflicts to a less significant level.
- Land for wildlife conservation, especially community-based wildlife sanctuaries, should be delineated outside protected areas. Such sanctuaries will increase available elephant range, thus mitigating conflict.

Table 1. Recent translocations to reduce human–elephant conflicts in Kenya

Translocation	Objective	Pretranslocation monitoring	Mvd	Mortality	Post-translocation monitoring	Measure of success
Mwea National Reserve to Tsavo East National Park, 1996	Reduce human–elephant conflict by reducing population by 50%; reduce numbers before fencing entire reserve	Distribution, numbers, age, sex and family structure of the population done	21	5	Radio tracking for one year	No reports of conflicts since translocation
Lewa Downs Conservancy to Kora National Park, 1997	Reduce habitat destruction, human–elephant conflict; restock Kora NP	Well-known bulls identified by conservancy managers	10	0	Ground and aerial monitoring	Reduction in <i>Acacia xanthophlea</i> destruction; reduced number of conflict incidents
Mwaluganje to Tsavo East National Park, 1999	Reduce habitat destruction; reduce conflict	Individual identification done	29	2	Individual identification and ground monitoring	Minimized number of conflict incidents
Shimba Hills to Tsavo East National Park, 2000	Reduce conflict	Rogue bulls identified by park managers	4	0	Ground monitoring	Minimized number of conflict incidents
Laikipia to Meru National Park, 2000	Reduce habitat destruction; reduce conflict	Individual identification of problem bulls done	10	0	Ground monitoring	Reduced number of human–elephant conflicts
Ongata Rongai to Amboseli National Park, 2001	Move stray elephant	Not available	1	0	Ground monitoring	Monitoring continued by Amboseli Elephant Project
Nakuru to Aberdares National Park, 2001	Move stray elephants	Not available	2	1	Ground monitoring	Not available
Sweetwaters Rhino Sanctuary to Meru National Park, 2001	Reduce habitat destruction; reduce conflict; restock Meru Park	4 months of monitoring; 120 identified, 16 family units and 20 lone bulls, 9 families and 9 bulls; 56 selected for translocation	51	5	Ground and aerial tracking ongoing	Reduced habitat destruction; no conflict incidents reported so far
Lewa Downs Conservancy to Meru National Park, 2003	Reduce conflict; restock Meru Park	Well-known bulls identified by conservancy managers	4	0	Ground and aerial monitoring	Reduced number of conflict incidents
Total			131	13		

Adapted from Omondi et al. 2002  
Mvd – moved

- Resolving human–elephant conflict requires an integrated approach, combining management strategies such as translocation, fencing, PAC activities and creating sanctuaries.
- Protecting humans and their property from wildlife menace has become a priority for KWS. The focus is to improve the conditions and resources of field stations in affected ranges to achieve this objective. PAC activities will continue to be carried out to help reduce conflicts.
- Plants popularly believed to offer some resistance as barriers against elephants, such as Mauritius thorn, should be encouraged.
- Local communities should be offered thunder flashes and trained in using them to scare away raiding animals.

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