

Oryx

Understanding patterns of crop damage by the African elephant

By Kwaslema Malle Hariohay, 15th November 2019

Elephant numbers have been declining dramatically across Africa as a result of poaching and other anthropogenic activities. Rapid human population growth, particularly in Tanzania, is causing people to move into previously uninhabited regions, often close to protected areas. This increase in human settlements close to such areas frequently results in encounters between people and wildlife, and particularly with African savannah elephants.



Group of elephants in the village near the Rungwa Game Reserve.

Human–elephant interactions pose challenges to people living in the vicinity of protected areas. When elephants use crops during the night they are often chased away by local people, and these incidents can result in injuries and fatalities for both people and elephants, undermining local conservation efforts. It is therefore important to continue researching these conflicts to improve our knowledge of causes and effects and thus to provide better advice to conservation authorities on how to resolve these challenging problems.

In our [research](#) in central Tanzania we found that the distance between a protected area and human settlements influences the magnitude of crop losses caused by elephants. Around Rungwa Game Reserve crop damage by elephants was highest close to the protected area, indicating that elephants are not moving far away, perhaps to avoid encounters with people. Maize was the food crop most frequently used by elephants in this area, with crop damage highest during the peak of cropping in the wet season.



Left: Agriculture Extension Officer inspecting a maize farm damaged by elephants. Right: Maize farm damaged by elephant.

The total estimated annual crop loss caused by elephants on farms near Rungwa Game Reserve was close to 450 ha, an average of 4 ha per affected household. This is an estimated 417 kg of maize per household, which is significant given that the farmers are receiving almost no compensation from the government. The estimated loss was particularly high for those with farms less than 1 km from the protected area boundary, whereas those living more than 5 km away experienced almost no loss.

The exceptional anatomical, physiological and behavioural features of elephants cause people to

perceive them as pests and as a dangerous threat. Secondary impacts, such as the unfairness of compensation schemes and intangible conservation benefits, influence negative perceptions and attitudes of people towards elephants.



Elephants near the Rungwa Game Reserve boundary.

However, as agents of ecological restoration, elephants provide socioeconomic benefits through forest management. Circa 400 timber and non-timber forest plant species depend on the digestive tract of elephants to disperse their seeds. Elephants are also less destructive than rodents, wild boars, and starlings, and they do not cause as many fatalities as hippopotamus and crocodiles.

When the positive and negative impacts of human–elephant interactions are compared, conservation benefits to people usually exceed conservation costs. It is the mismanagement of elephants that leads to increasing negative impacts. When properly managed elephants can provide significant contributions to environmental conservation and rural poverty alleviation. To ensure continued but more peaceful coexistence between people and elephants in the region of Rungwa Game Reserve, we recommend that the government provides conservation education to the farmers and implements appropriate mitigation measures to control crop losses. An improved compensation scheme for losses is also required. On their side, farmers should avoid cultivating crops in areas close to the protected area. Improved land-use planning would also help to minimize conflicts in this and in other areas that are favoured by elephants.



Maize farm damaged by elephant.

All photos: Kwaslema Malle Hariohay

The open access article [Human–elephant interactions in areas surrounding the Rungwa, Kizigo, and Muhesi Game Reserves, central Tanzania](#) is available in *Oryx—The International Journal of Conservation*.



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