

In the May issue, researchers **Katarzyna Nowak** and **Trevor Jones** reported on their subjects of study, the 'mountain' elephants of the Udzungwas. Here they put into perspective the local conflict between elephants and humans, and describe what is being – and could be – done to avoid it.



UDZUNGWA ELEPHANT PROJECT (4)

# rebuilding a bond



**THE HUMAN-ELEPHANT RELATIONSHIP** in East Africa has a very long history that is typified – in spite of the huge impact of the ivory trade – by coexistence. Around the Udzungwa Mountains in southern Tanzania, the use of the word 'conflict' (or *mgogoro* in Kiswahili) with reference to interactions between elephants and people is relatively new. As recently as the 1960s, elephants moved easily between the greater Ruaha, Udzungwa and Selous ecosystems, but in the past few decades they have been confined by people and farms, becoming increasingly isolated within protected area 'islands'. Two major challenges have arisen: only a handful of wildlife corridors out of a once-labyrinthine network of elephant

routes remain; and local increases in crop-raiding have begun to darken the attitudes of communities towards the animals. We are trying to work out the relationship between corridor loss and human–elephant conflict (HEC).

On the eastern side of the Udzungwa Mountains National Park, where our research has been most focused, elephants only started coming out of the forest and entering farms in 2008. They did so at about the same time as two major corridors linking eastern Udzungwa with the Selous Game Reserve were closed off. These corridors, known as Ruipa and Nyanganje, have been blocked by the new conversion of land to agriculture, as well as the local immigration of cattle herders since about 2006. Anecdotal evidence points to increased crop-raiding since that time at both ends of these corridors. Also affected are areas around the historical Mwanihana–Magombera corridor, which has been occupied by a large-scale sugarcane plantation since the 1960s. It is possible that in this and other regions, the blocking of elephant movements in this way is intensifying HEC.

Every year since 2008, crop-raiding in our focal area has increased, with the elephants becoming habituated to farmers' efforts to keep them away by means of noise, dogs and fire. One major factor is undoubtedly the lack of a buffer zone between the forest and the farms. Last year, local women were banned from making their weekly collection of firewood, which had been permitted up to one kilometre into the forest. This has compounded people's animosity towards elephants, as they believe that the animals' more daring forays into their fields are

in part due to this prohibition, since there are no longer firewood collectors to drive the raiders into the park's interior. Incidents of Problem Animal Control (the legal killing of crop-raiders, man-eating carnivores and the like by the authorities) have also increased, and although they are typically followed by a short period of respite, inevitably the raids resume.

Our Udzungwa Elephant Project team ([www.udzungwa.wildlifedirect.org](http://www.udzungwa.wildlifedirect.org)) has begun to quantify crop-raiding in this highly fertile region and has learned that elephants browse 33 different crops – everything that is available in fact, except for chillies. Tomatoes are also not favoured, but the plants are trampled when there is a desired tree in a tomato field (see photo opposite). In collaboration with Ponjoli Joram, the ecologist at Udzungwa Mountains National Park, we carried out a full year of comprehensive HEC monitoring up to September 2011 and found that 138 individual smallholdings within a four-square-kilometre area were each visited on average three times by elephants. Together with Joram, and equipped with a better understanding of crop-raiding dynamics, we then began some farm-based interventions. These included the construction of chilli-oil and beehive fences, with funding from UNESCO's Rapid Response Facility (<http://whc.unesco.org/en/news/744>).

We are still in the early days of monitoring the efficacy of these barriers and so far the results have been mixed. At first the elephants were surprised when they encountered the fences – one eyewitness reports a group becoming

very agitated and trumpeting as they rushed back into the forest before later turning up at the park headquarters, still visibly unsettled. Farmers have described elephants walking around the one-kilometre-long fence to gain access to fields in the evenings and then, on their more hurried way back to the forest in the mornings, breaking through the bamboo poles that hold up the barrier. Once the fence was down in a few places, the animals repeatedly passed through these broken points. One farmer even related how an elephant turned around and reversed through the fence, and our team have seen individuals spraying dust from the road onto the chilli-oil fence, presumably to make it less potent!

Camera traps are helping us to assess the demography of crop raiders (they are nearly always bulls), to identify individuals and to capture their behaviour at the fences. The fact that a bull clearly showed no fear of a chilli-oil fence (see photo below right) points to the challenge of maintenance; within weeks or even days the chilli oil wears off and has to be reapplied, particularly during the rainy season.

Although the farmers were sceptical of our efforts at first, several have become more enthusiastic. In January they formed the first cooperative to maintain and extend the barriers, and now collaborate with the village beekeeper to attract bees to the 50 hives that make up the inner fence. A small number of them are also employing a different and locally conceived deterrent: elephant dung. They mix the dung with water and spread it over their crops, taking advantage of the fact that elephants appear to exhibit coprophobia – or they don't like food coated with their own faeces! We are running experiments to test how effective this method really is and, since the dung has to be reapplied almost daily, are investigating how it may be made more practical.

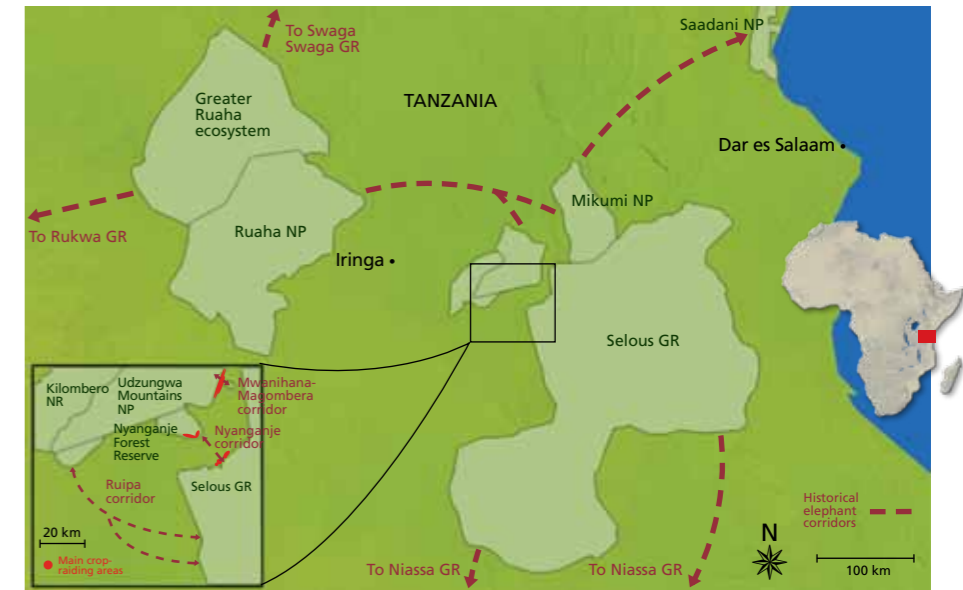


ABOVE Chilli oil applied to fences soon wears off, as demonstrated by this camera-trap photo of an elephant lifting a fence rope with the most sensitive part of its trunk.

LEFT Ecologist Ponjoli Joram interviews a farmer about recent elephant damage to his field.

OPPOSITE, ABOVE The Udzungwa Elephant Project's Paulo Mndeme checks the parallel chilli-oil and beehive fences that separate national park from farmland.

OPPOSITE, BELOW Following a bull group's foray outside the national park boundary, this young male was subjected to Problem Animal Control. The local people gather to buy the meat; park rangers will take the tusks, tail and feet.



SOURCED FROM THE UDZUNGWA ELEPHANT PROJECT

Around the Udzungwas, the problem of crop-raiding is localised; there are long stretches of the park boundary where there is very little HEC or even none at all. The pattern is also not uniform across Tanzania, with some areas showing HEC to be stable or decreasing. In an era when newspapers and other media often exaggerate or sensationalise the incidence of 'rampaging elephants' but rarely examine the root causes, it is important to remember this – and to be aware of the language that conservation practitioners choose to use.

It is also imperative to continue monitoring and improving these mitigation methods, both to help protect the livelihoods of farmers and their families and to safeguard the human–elephant relationship. For the longer term, however, wiser and community-led land-use planning offers the best solution. By this we mean buffer-zone projects that may include photographic tourism and, crucially, corridor

restoration. Then, finally, we may be able to confirm what we strongly suspect: that the loss of elephant corridors contributes to crop-raiding and greater conflict with people.

The elephant–human relationship is a long and complex one. Elephants feature prominently in Tanzanian consciousness and identity, as manifested on the 10 000-shilling banknote, on bank cards, souvenirs, textiles, even jam labels. It is this symbolism and the cultural value of elephants to humans – alongside the animal's many irreplaceable values, both ecological and intrinsic – that should ultimately be our emphasis.

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