



THE ST ANDREWS PRIZE FOR THE ENVIRONMENT

May 2013

The Elephants and Bees Project **Using Bees as a Natural Deterrent for Crop-Raiding Elephants**

Elephants in Kenya are not confined to national parks and reserves; hence interactions with farmers and crop-raiding elephants can pose serious social, political, economic and conservation problems. Finding ethical and socially appropriate deterrent methods to protect rural farms from damaging crop-raids is a major goal for elephant researchers and wildlife managers across Africa.

In partnership with Save the Elephants, Oxford University and the Disney Worldwide Conservation Fund, it has been proven that African elephants will actively avoid the threat of African honey bees. Not only do the elephants run away from disturbed bee sounds (King *et al.*, 2007), but it has also been proven that elephants emit a unique low frequency (infrasonic) rumble that warns other elephants in the area to retreat (King *et al.*, 2010). These behavioural discoveries were ground-breaking, encouraging the development and testing of a unique application for this behaviour through the use of protective beehive fences around farmers' fields, with the aim of reducing human-elephant conflict (HEC). The Beehive Fence HEC mitigation concept has spread rapidly and Beehive Fences are presently up and running by farmers, NGOs and/or Government partners in test sites in Kenya, Tanzania, Uganda, Botswana, Mozambique and India.

The beehive fences are simple and cheaply made (\$150 to \$500 per 100m depending on the beehive type) with no cement, and using only locally sourced materials. In the beehive fences, hives are hung every 10 metres in a specific formation so that should an elephant touch one of the hives, or interconnecting wire, the beehives all along the fence line will swing and release the bees. This beehive fence has been field tested in three rural farming communities in Kenya with over 85% success rate in all locations (King *et al.*, 2009; and King *et al.*, 2011). Rural farmers can benefit from beehive fences in many ways including:

- Reduced invasive elephant crop raids that cause trauma and often injury to family members
- Increased yield production through reduced damage and, potentially, increased pollination of crops
- Additional income through the sale of '*Elephant-Friendly Honey*' and bee products
- Increased quality of life with fewer conflict situations and fewer elephants being injured

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Kenya has adopted beehive fences as one HEC method in their *2012-2021 Conservation and Management Strategy for the Elephant* as they recognise the benefit sharing potential that beehive fences could have for communities living next to national parks and reserves. In 2012, Beehive Fences were set up in Southern Africa in three districts of northern Botswana with the Department of Wildlife and National Parks, funded by *The World Bank GEF*; and in Mozambique's Niassa National Reserve with the Niassa Carnivore Project.

During 2011 and 2012, test Beehive Fences have been set up independently in several sites in Uganda, Tanzania and India by outside organisations (e.g. as The Wildlife Connection, Uzungwa Elephant Project, WCS, FFI, and UNESCO). These projects have been supported by the team's free *Beehive Fence Construction Manual* and online advice as all videos, photos, research papers and manuals are free to download from www.elephantsandbees.com.

Any money received from *The St Andrews Prize for the Environment* will be divided by the group to focus on two areas. Firstly, "Looking to the Future", it would support some of the fieldwork costs for two pieces of vital research work to begin. The two new research studies to be conducted are (a) whether Asian elephants will react the same to Asian honey bees as the African elephants do to African bees so that a formal field trial of the Beehive Fence idea can be carried out in Asia; and (b) whether the Kenyan Beehive Fences have any significant impact on (i) pollination of natural vegetation, (ii) pollination of crop species, and (iii) on the ecology of other pollinating species. Secondly, for "Present Work", the group would like to expand their Beehive Fence network within East Africa by (a) translating the Beehive Fence Construction Manual into several tribal languages, (b) visiting new HEC field sites to determine where Beehive Fences might be appropriate for suffering communities, and (c) expanding their elephant behavioural research to further understand where honey bees come on elephants' "threat scale".

www.elephantsandbees.com



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A group of farmers living in a community in Niassa National Reserve in Mozambique learning to make a beehive fence to protect their farms



Farmers regularly check their beehives for predators, maintenance and honey production



A female matriarch, Resilience, reacts dramatically to the sound of disturbed bees during a sound playback experiment in Samburu National Reserve, Kenya



Jars of Elephant-Friendly Honey harvested from some of the beehive fences in Ngare Mara, northern Kenya



A typical beehive construction workshop training community members to make Kenyan top bar hives to hang on beehive fences, Sagalla Community next to Tsavo East National Park, Kenya



A farmer and his wife, prepare to harvest Elephant-Friendly Honey from their beehive fence in Sagalla Community