EDINBURGH UNIVERSITY EXPEDITION TO THE TAITA RUKINGA WILDLIFE CONSERVANCY, KENYA: AUGUST - SEPTEMBER 2001

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Project 'Filimbi' - An Ecological Study on Hornbills

In the summer of 2001 University of Edinburgh team undertook an ecological research expedition to southeast Kenya on the impact of hornbills ('Filimbi' in Swahili), as seed dispersers, on habitat regeneration. Fruit is a large part of the hornbill's diet and they play a key role in the dynamics of plant regeneration.

The project was based at the Taita Discovery Centre, a research station in the Taita Rukinga Wildlife Conservancy. The area consists of two species-rich biogeographic zones. The *Acacia Commiphora* woodland represents the southern most extent of the Sahel and is home to a vast array of mammal and bird life. The plains are interrupted by huge rock outcroppings (kopjes) which harbour cloud forests. These contain a great diversity plant and animal species many of which are endemic.

The expedition established all the objectives it set out to achieve and more.

It collected invaluable scientific data on hornbill ecology to contribute towards its conservation and the preservation of its habitat.

It investigated opportunities for further study.

It aided communities and created links between Edinburgh University with foreign institutions such as the National Museums of Kenya and the Kenyan Wildlife Service.

The scientific data was collected by:

a) Calculating estimates of hornbill densities of the four different savannah species in three different habitats by population counts using line transects and a computer programme, 'Distance', to give an accurate density estimate.

b) The plant species were identified in a representative sample area of each site to determine vegetation types and fruit availability.

c) Species behaviour, including excrement analyses were carried out to establish food preferences in the different habitats.

It was discovered that the von der deckens hornbill *Tockus deckeni* is likely to play the largest role in seed dispersal as it was present in the highest densities and had the greatest fruit intake in its diet. The african red-billed hornbill *Tockus erythrorhynchus*, although almost as abundant, fed more on insects, such as the termites found in elephant dung. The african grey hornbill *Tockus nasutus* and the eastern yellow-billed hornbill *Tockus flavirostris* were present at much lower densities. The occurrence of all four species in sympatry, in the same area, along with observations of different feeding preferences, provides evidence for niche partitioning.

The most popular fruits were those of the *Commiphora* trees, e.g. *C. campestris,* and *C. africana* and the *Acacia* , e.g. *A. senegal* and *A. nilotica*. The great abundance of von der

deckens and red-billed hornbills suggests that they could be keystone species of these savannah ecosystems.

Information was obtained in a man-influenced area, in the shambas of villages. Here, during the wet seasons hornbills are considered a pest species as they consume many of the crop seeds. A pilot study was also carried out of the arboreal silvery-cheeked hornbill, in the Taita Hills, a much wetter and ecologically diverse habitat. An interesting future study would be the role of this hornbill in the spread of the exotic *Maesopsis* tree whose nutrient rich fruits are eaten and dispersed predominantly by these hornbills.

In addition to the ecological findings, the expedition also made a significant contribution to the local communities. By employing experts in botany and ornithology and rangers, and sharing our ecological skills and knowledge, it encouraged further work in environmental conservation and research. It also introduced them to new methods, e.g. the 'Distance' population sampling method and the use of computer technology. The findings were also discussed with the local communities and the schools to promote interest in bird life and encourage a long-term study.

Overall, the expedition was highly successful for all those involved and I wish to thank all who supported the expedition in terms of funding and support particularly the University of Edinburgh.