Long-distance Movements of an Unprotected Population on the Laikipia Plateau, Kenya

Chris Thouless

The Laikipia-Samburu elephant population of approximately 3,000 animals, is the largest surviving population in Kenya outside protected areas. The southern part of their range is in Laikipia District, which consists of large-scale private ranches and small-scale farming settlement schemes. The northern part of their range is in Samburu District, consisting of low lying pastoralist areas and forested mountains. In the 19th and early 20th centuries there were many elephants in Samburu and almost none in Laikipia, which was gradually colonized by them during the late 1960's onwards. This southwards movement was accelerated by the heavy poaching in Samburu during the 1970's and 1980's, while Laikipia ranches provided greater security.

Radiotracking of 20 elephants during the past two years by the Laikipia Elephant Project has shown'that there are now 4 main subpopulations.

(1)　Laikipia residents with home ranges of about 100 km^2
(2)　Itinerant Laikipia elephants moving around ranches and settlement areas, which are the main crop-raiders
(3)　Forest elephants, moving onto the plains after rain
(4)　Long distance migrants, moving twice yearly between Laikipia and Samburu, during the long and short rainy seasons, a distance of more than 100km, giving total home ranges in excess of 3 ,000 km^2

The regularity of this movement gives the appearance of a traditional migration, but it cannot have occurred for more than 20 years and older elephants will once have been residents in Samburu. It appears that the reason for the return to Laikipia during the dry season, even though poaching is now at a very low level, is a result of increasing human populations in pastoralist areas. As temporary rain pools dry up, elephants are forced to use dams and rivers where they compete with herders for access to water, and are vulnerable to spearing. In contrast Laikipia ranches have abundant permanent water and there is an attitude of tolerance towards elephants.

The Impact of Elephant Density on Biodiversity in Different Eco-climatic Zones in Kenya

John Waithaka

Poaching pressure and habitat fragmentation in Kenya, coupled with an unprecedented demand for land from an ever increasing human population, have brought about the compression of elephants into few refuge areas. The same forces have caused loss of this species from many areas that previously constituted their natural range. The direct consequence of concentrating elephants into a few areas is the creation of artificially high elephant densities which may cause undesirable changes in woodlands, bushes, swamp vegetation and other existing habitats. On the other hand, extermination of elephants from their natural habitats removes a species that plays a central role in determining the rate, scale and direction of habitat change. Available information *suggests* that the disappearance of the elephant will reduce biological diversity and increase species extinction rates.

The aim of this study was to quantify the role of elephant density in the restructuring of habitats. The first objective was to determine whether there have been major vegetation changes over the years in areas with adequate information on trends in elephant numbers. Secondly, the study undertook to investigate

the ecological impact of elephant density on habitat and how this impact varies in different eco-climatic zones (defined by rainfall). Thirdly, the study sought to establish the extent to which elephant impact affected the abundance of other mammalian species and to detect, from past and present records, any changes in browser-grazer biomass.

Three areas were selected for the study: the Aberdares National Park which receives rainfall in excess of 1,000mm per annum, the Laikipia Plateau which receives up to 850mm, and Tsavo, which is a semi-arid area and receives between 250 and 500mm of rain annually.

Sampling sites in Tsavo and Laikipia were chosen in areas where human land-use practices provided distinct boundaries separating different densities of elephants. In the Aberdares National Park, sampling was done along an elephant-density gradient which was established using the dung-count technique.

The role of elephants in creating gaps in forests and promoting patch dynamics was determined within selected forest sites in the Aberdares. Their role as seed dispersal agents was also investigated both in the Aberdares and Tsavo National Parks.

Vegetational parameters such as height, density, species composition and biomass were measured using appropriate techniques for different life forms. The PCQ (Point-Centre-Quarter) and Pin Frame were used for sampling trees/shrubs and herbs respectively.

Aerial photographs were used to detect any vegetational changes in areas where the history of elephant numbers and distribution was known. In these areas, the changes in animal species composition, particularly the trend in grazer-browser biomass ratios, was investigated.

The overall trends established so far are summarised as:

i) **Changes in Landscape**
    In the Aberdares National Park, the open area under grass around Treetops lodge has increased from one hectare in 1953 to more than 50 hectares in 1992.

There has been a decrease in large trees and an increase in low bushes making the lower part of the park more open than it was 40 years ago.

ii) **Trees And Shrubs: Height, Density and Biomass**
    In Tsavo East & West, these parameters are greater outside parks than inside; a similar trend is apparent in Laikipia ranches without elephants compared to those with elephants. In the Aberdares, there is a significant in-crease of the same variables along a decreasing elephant density-gradient.

iii) **Grass Cover and Biomass**
    Grass cover and biomass were consistently higher inside Tsavo Park than outside; higher in Laikipia ranches that tolerate elephants than in those that fence them off, and in the Aberdares, higher in areas of intermediate elephant densities than in those with extreme densities.

iv) **Seed Dispersal**
    It was evident that elephants act as agents of seed dispersal for certain plant species; more plant species were dispersed by elephants in areas of higher rainfall (Aberdares) than in areas with low rainfall (Tsavo).

v) **Animals**
    In the Aberdares, the bongo disappeared from the area around Treetops lodge in the early 1970's. In general, browser species have decreased significantly while there has been a remarkable increase in the grazer species such as buffalo, water-buck and warthog.

In conclusion, the results analyzed so far show that elephants have a strong habitat modifying role which is potentially of great importance to livestock economies as they reduce bush cover and increase grass cover. At the appropriate densities, elephants enhance biological diversity in parks, a fact that in itself provides a strong basis for promoting tourism. The results also indicate that the expansion of elephant range to cover areas beyond parks and reserves should be encouraged, in order to ease elephant compression and the associated ecological and economic impacts.