
A Report of the Laikipia Elephant Count, 1990

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A total count of elephants in Laikipia District and the adjoining parts of western Isiolo and southern Samburu Districts was carried out on the weekend of 15-16 September 1990 as part of the Kenya Wildlife Service's Laikipia Elephant Project. Eleven aircraft covered approximately 10,000 km² including all the private ranches of the Laikipia plateau, settlement areas in the south of the district, the Mukogodo reserve, pastoralist areas in Isiolo District as far north as the Ewaso Nyiro river, and the Samburu and Buffalo Springs Game Reserves. In the preceding week a sample count was carried out by the Department of Resource Surveys and Remote Sensing (DRSRS), and, in several forest areas where counting from the air was known to be difficult, additional ground counts were conducted.

The count was carried out by a wide range of people including members of Kenya Wildlife Service (KWS), local ranchers and representatives of various conservation organizations. Many of the participants had also taken part in the 1988 and 1989 Tsavo counts which used the same methods. A substantial contribution was made by private individuals who donated their time and use of aircraft; KWS provided three aircraft.

Introduction

The Laikipia Plateau of north-central Kenya lies between the highlands of Mount Kenya and the Aberdares. On the east it is bounded by an escarpment down to Samburu country and on the west joins the Lerochi Plateau south of Maralal. Much of Laikipia still consists of large-scale private ranch-lands and it is in these areas that Kenya's second largest elephant population has found refuge from the poaching further north. The presence of these elephants has caused many management problems, and to tackle some of these the Laikipia Elephant Project was started by the KWS in May 1990. A priority for the project was to establish how many elephants there were in the area. Although KREMU (now DRSRS) has conducted a number of sample counts, the clumped distribution of elephant herds means such counts do not give accurate figures and for this reason it was felt necessary to carry out a total count.

In the past Laikipia appears never to have contained large numbers of elephants. It is thought there was a seasonal movement south from Samburu into the district by elephants following the major river systems of the Ewaso Nyiro, Ewaso Narok and Mutara. After a brief stay, they would return north.

From the mid-1970s, however, the elephant population in Laikipia increased and showed a tendency to remain in the area for most of the year. It is very likely that this change was due to widespread poaching in Samburu District. The private ranches of Laikipia provided the security missing in the northern part of the elephants' range as well as sufficient food and water. An indication of this is given by the ratio of live to dead elephants as counted by DRSRS for the two districts in 1977. The estimate for Laikipia was 2,093 live elephants to 51 dead (41:1), while in Samburu it was 710 live to 2,793 dead (1:3.9).

Although elephants were tolerated on many of the Laikipia ranches, they interfered with ranching operations, ruining fences, breaching dam walls, and pulling up water piping. On ranches such as Ol Pejeta, well-established fencing systems for running cattle in paddocks were almost completely destroyed by elephants.

Another problem was that the southern movement of elephants brought them into contact with the northern expansion of small-scale farming on government and private settlement schemes. The farmers in these areas did not have the capital resources available to large scale ranchers and were powerless to keep the elephants off their plantations of maize and other crops, which could be destroyed overnight by a herd of elephants. Most of Laikipia is extremely marginal for farming, and the presence of elephants further reduces the possibility of successfully producing a harvest.

Several attempts were made in the late 1970s to drive the elephants back north. In March 1978 300-500 were driven from the region of Tharua/Solio down the Ewaso Nyiro to El Karama using 25 men, four ground vehicles, a helicopter, and fixed wing aircraft. A second drive attempted to move elephants out of the Rumuruti area but had little success. In 1979 similar methods were used to push elephants out of Rumuruti and from the Lariak Forest. Although it was possible to move the animals, it was very difficult to stop them from breaking back, and overall the operation was considered a failure.

In late 1981 the Senior Warden (Planning), Peter Jenkins, and the Senior Biologist, Patrick Hamilton, were charged with investigating this situation in order to find a solution. After consultation with the local community they produced a report in March 1982 recommending that an electric fence be built across Laikipia, running 162 km from the Baringo escarpment in the west to the Loldaiga Hills in the east. After the elephants had been driven north, this would have separated ranchers who were prepared to accept elephants on their land from ranchers and small farmers in the south who did not want them. The fence was never built, largely due to lack of funds but also because of the realization that failure to maintain the fence along any section would undermine the whole exercise.

Since 1982 there has been no improvement in the situation and, as a result of the continued sub-division for settlement of what was previously ranch-land, the zone of intense conflict has increased. Some ranches have abandoned the attempt to maintain internal fences and consequently have been forced to adopt less efficient management practices, while others such as Mogwooni and Tharua have become completely fenced with near total exclusion of wildlife. Laikipia is now a patchwork of areas where elephants are tolerated and places where they are regarded as a nuisance.

The KREMU estimate for the number of elephants in Laikipia District has ranged from 1,927 in 1978 to 4,106 in 1980, and was 2,492 for 1987.¹ However, little confidence can be attached

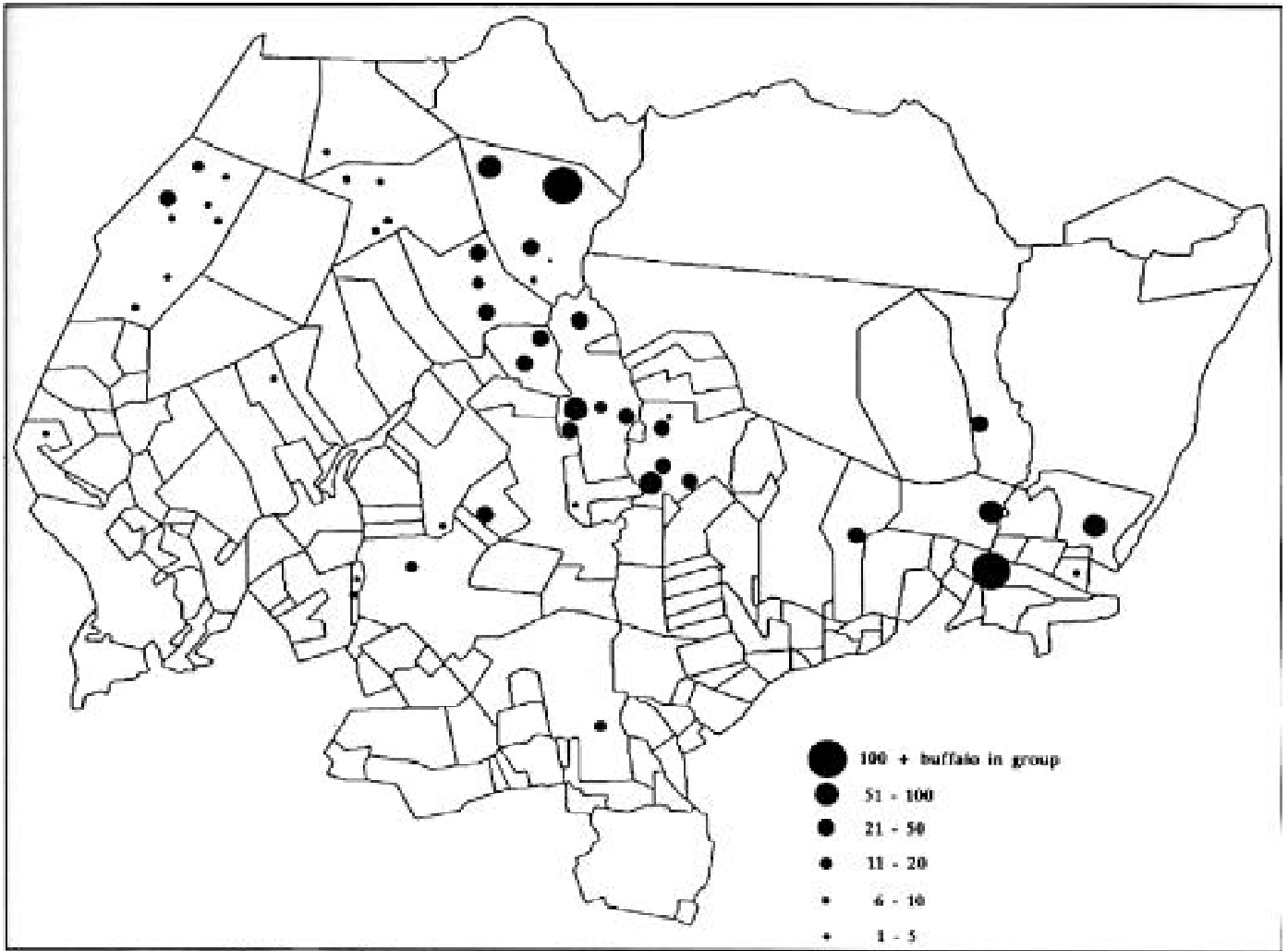


Figure 1. Distribution of buffalo seen during the aerial survey of Laikipia on 15-16 September, 1990

to these figures since standard errors are over 50% of the total. This means that total counts, although expensive, are the only adequate way to monitor changes in numbers. The principal objective of the present census was to count Laikipia's elephants, both live and dead, in order to establish an accurate baseline from which to monitor future changes in the population.

Methods

Total aerial counts rely heavily on the experience of those involved. Many of the team had taken part in the 1988 and 1989 Tsavo counts which used the same techniques, and the observers and pilots included some of the most experienced in East Africa. As far as possible, crews of aircraft were chosen to blend experienced with inexperienced observers and most included people with detailed knowledge of the areas over which they were flying.

The date chosen for the count was towards the end of the dry season when vegetation is least thick and before many elephants have moved north into Samburu country. Since little is known about the movements of the different sub-populations in the area, any time chosen has its disadvantages, but it is thought that this is the period when the largest proportion of elephants using Laikipia during some part of the year are actually present. Since there had been recent reports of elephants around Kipsing and in the

Samburu/Buffalo Springs Reserves, these areas were included in the count. It was not considered worthwhile extending further north since elephants in Lerochi and the Mathews Range were likely to be in dense forest where they could not be counted easily from the air.

The area covered was divided into 19 discrete counting blocks, bordered by usually well-defined features such as roads, rivers, ranch boundaries, etc. Each team covered one or two blocks each day. Individual crews were allowed to decide on the precise flying pattern to be followed, depending upon the topography of their block and the wind direction, but in general blocks were counted by flying along transect lines separated by approximately one kilometre. At the ends of transect lines aircraft flew into adjoining blocks for a distance of two to three km to get an overlap in coverage. In aircraft with four person crews, the two rear-seat observers were responsible for spotting animals and calling them out to the front-seat observer who did the recording, navigating, and photographing of groups of more than 25 elephants. In two- and three-seater aircraft the observer was responsible for both observing and recording.

When a group of over 25 elephants was seen, an estimate of the group size was made and a set of photographs taken with a 35mm camera and 400ASA film following methods described by Norton-Griffiths.² After the census the animals in these herds

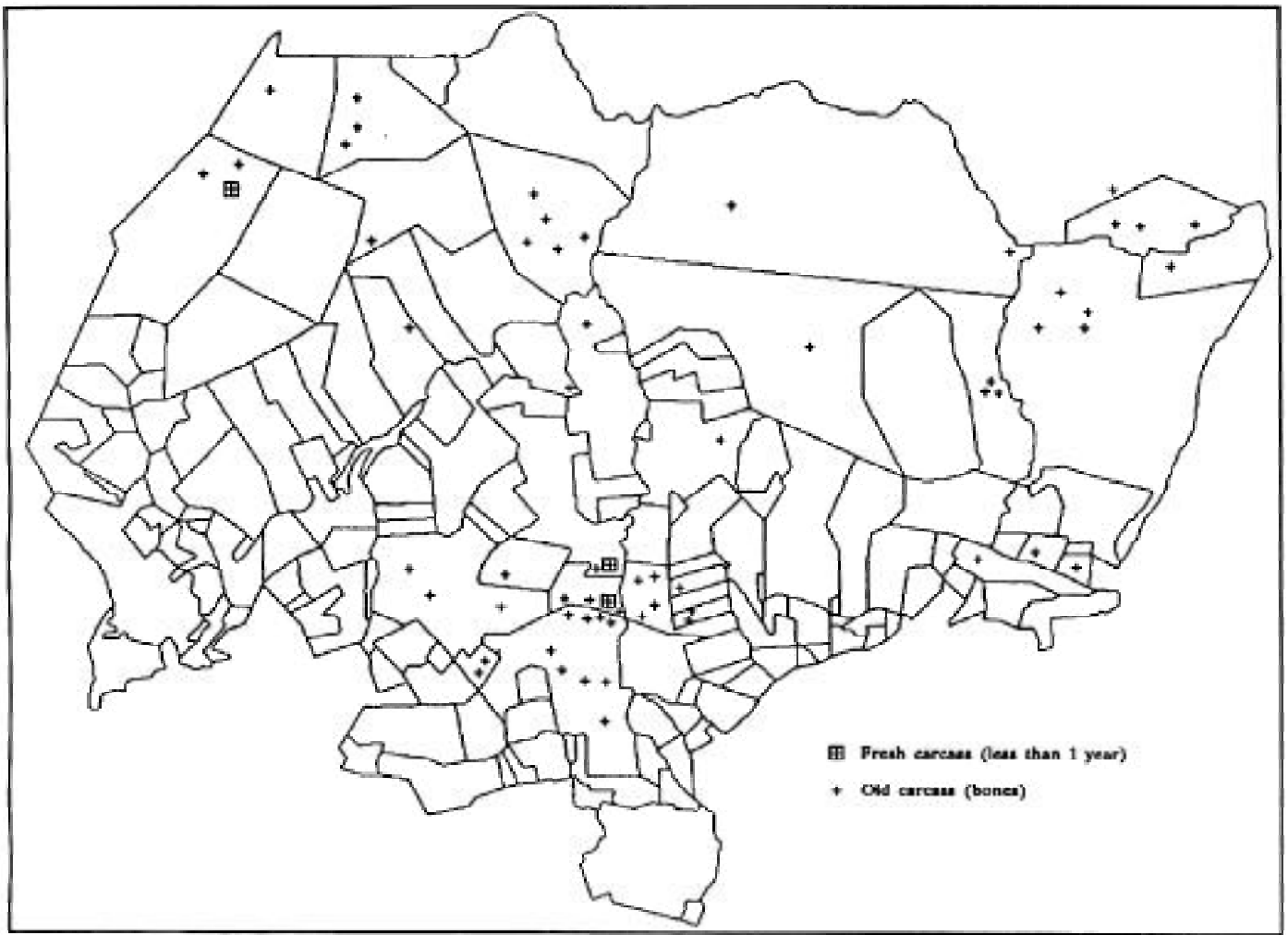


Figure 2. Distribution of elephant carcasses seen during the survey of Laikipia on 15-16 September, 1990

were counted as accurately as possible from the resulting photographic prints. Group sizes for large herds of buffalo were only estimated. Dead elephants were divided into four categories by the Criteria used in the Tsavo counts.³ These were:

1. **'Fresh'**, in which the carcasses still have flesh beneath the skin giving the body a rounded appearance, where vultures are probably present, and where a liquid pool of putrescent body fluids is still moist on the ground. This category applies to carcasses thought to be no more than three weeks old.
2. **'Recent'**, in which carcasses less than one year old may be distinguished by the presence around the body of a rot patch which has killed and discoloured the vegetation. Skin is usually present and the bones are relatively un-scattered except in areas of high predator density.
3. **'Old'**, in which carcasses have usually decomposed to a skeleton with bright white bones clearly visible, but where the rot patch has disappeared or where vegetation is beginning to grow once more. The skin may still be present in arid areas but will have disappeared in wetter zones. This category applies to elephants that died more than one year previously.
4. **'Very old'**, in which the bones are beginning to crack and turn grey. From the air the skeletons no longer stand out as distinct entities and are difficult to see.

For the purpose of analysis, these four categories were condensed into two: those less than a year old which were collectively called 'Recent' and those more than a year old, called 'Old'.

Flight paths were marked on a map and the locations of animals were numbered serially on data sheets. After a day's flying this information was transferred to clean maps and data sheets.

The whole count took two days, and involved approximately 60 hours of observation for the main count plus some time for repeat counts. Count rates for blocks varied from 88 to 587 km per hour with a mean of 178 km² per hour; this compares with a mean of 256 km² per hour on the 1989 Tsavo count. On the first day, when the blocks with the highest density of elephants were counted, only three of the ² eleven blocks were covered at a rate of more than 200 km² per hour.

Results

Elephants. The number of elephants counted was 2,312 of which 2,045 were in Laikipia district. This figure includes ground counts, of adults only, in the Ngare Ndare and Mukogodo Forests and one group of eight bulls on Laikipia Ranching which was seen by security patrols on the ground but not from the air. If different figures were noted for a group of elephants seen by two aircraft then the higher number was taken. This was also the case when a precise number given by an observer varied from a photographic count. However, if the visual figure was an approximation then the photographic count was used.

The total given is a minimum estimate, and it is probable that the true figure for the area is several hundred more. Total counts of elephants typically understate the actual value by a factor of 10%⁴ though this will vary according to the time taken for the count, the skill of the observers and pilots, and the thickness of the vegetation. Underestimation results from failing to observe some herds and from under-counting the number of animals. Many females had given birth during the months preceding this count and it is particularly easy to miss young calves, especially if they respond to the sound of an aircraft engine by moving under their mothers belly.

In an attempt to establish the level of these errors parts of blocks were flown twice in the same day to ascertain how many elephant groups were seen by one set of observers but not by the other. Few conclusions could be drawn from this since, in the few hours between flights, groups moved and split up to the extent that it was difficult to identify the original sightings. Comparison of observer estimates of elephant group size with counts from photographs showed that the latter gave a lower figure. In five cases of precisely counted groups of between 29 and 87, all the corresponding photographic counts were lower by an average of 20%. In 13 cases where group sizes were assessed at between 16 and 440, seven had lower photographic counts and five were higher; estimates averaged 10% higher than photographic counts. The largest group was reckoned to be between 420 and 600 by different crews. The results from the first crew to see them have been used since the group was more tightly clumped then. In this case the photographic count was 442. The relationship between photographic count and true group size is likely to be affected by the altitude and angle at which the photographs are taken, the thickness of the vegetation, and the level of disturbance of the group. In general, the best photographs were those taken from above 400 ft and nearly vertical since this reduced the amount by which elephants were obscured by vegetation or each others bodies.

The sample count conducted the previous week by DRSRS gave a similar result to the total count. The population for Laikipia

District was estimated at $1,881 \pm 6255$ compared with the total count figure of 2,045.

Dead Elephants. Only 65 elephant carcasses were seen and of these three were 'recent' or less than one year old. There was considerable variation among blocks in the number of carcasses seen and it is clear that the experience of observers was a major factor. Very few carcasses were found during the sample count; and this produced an estimate of 18 old carcasses and no recent ones.⁶

The largest number of carcasses were seen in the southern ranches of OI Pejeta, Vamalda and Erere, and in the vicinity of Samburu Game Reserve. All these areas were counted by the same experienced crew.

Considerable alarm was occasioned when a very experienced crew spotted a scene of great slaughter. Happily, it proved to be a film set dressed with plaster-of-Paris elephant carcasses. On close inspection these can be distinguished from the genuine article by the uniform white colour, lack of rot patch and, above all, the clean surface on a removed trunk.

Buffalo. The total number of buffalo recorded was 1,387. This is certainly a considerable underestimate which can be attributed to the facts that buffalo were not the main focus of the count and the dense vegetation covering much of Laikipia makes it difficult for buffalo to be seen from the air especially during the middle of the day when they retreat into the shade of trees.

A much higher figure of $6,433 \pm 2,774$ buffalo was estimated from the DRSRS sample count which was conducted between 8 and 11 am when buffalo are more visible.⁷

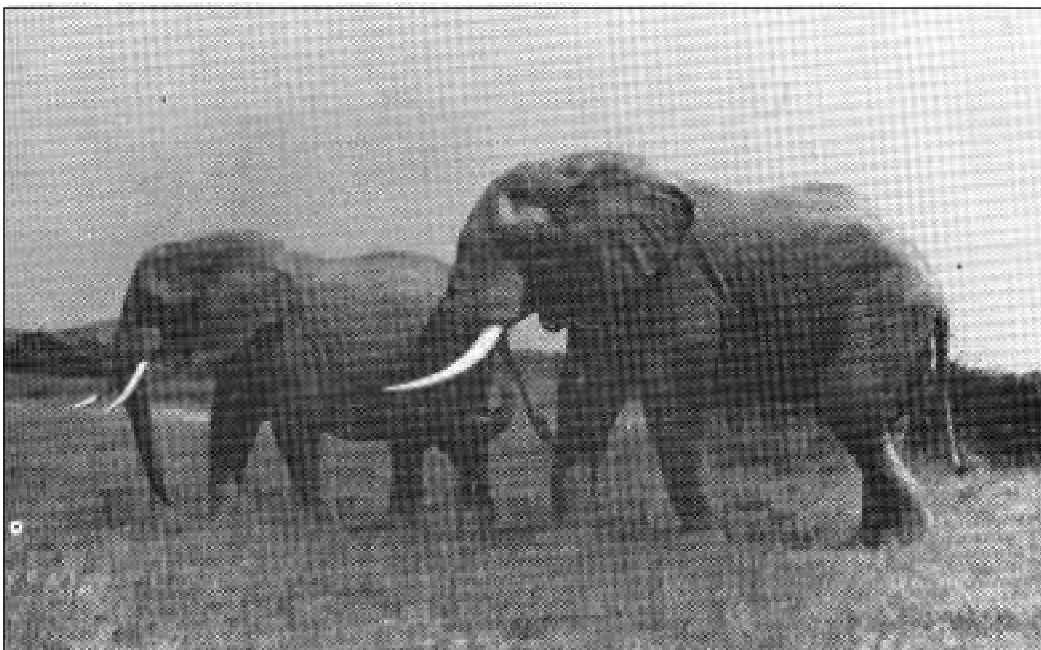
Discussion

This count confirms what had been suspected that the Laikipia elephant population is of major significance within Kenya, being the second largest in the country after the 5,000 animals within

the Tsavo ecosystem. The fact that the Laikipia population is one of the few in Kenya that apparently has not declined considerably in recent years bears tribute to the success that private land-owners in the area have had in preventing poaching, and this is backed up by the low number of carcasses that were found.

In some areas there were fewer elephants than expected. For example it has been considered that there is a semi-resident population of 300 animals on OI Ari Nyiro, but fewer than 200 were seen there. However, large herds were seen nearby on Mugie and General Lengees' farm.

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An oestrous female is guarded by a musth male in Amboseli, Kenya

No elephants at all were seen on Colcheccio, which often has large herds, and the numbers on O1 Pejeta were also lower than expected. There were just over 100 elephants in Samburu and Buffalo Springs Game Reserve and another 50 in adjoining areas in comparison to the last published figure of 630.⁸ However, the KREMU count on which this figure was partly based was carried out in February and there may have been a seasonal influx of elephants at that time.

No elephants were seen in settlement areas or in areas which have been subdivided but not yet properly settled, such as Two Rivers and Kimugandura. There are thought to be some persistent crop-raiders which hide in thick bush in the Ngobit gorge during the day but these were not seen during the count. The presence of elephants in the Rumuruti forest is particularly important, since crop raiding is a serious problem in settlement areas north of this forest.

The concentration of elephants in the central Laikipia ranches was remarkable, with one herd of over 400 animals, and more than 750 on just two ranches, O1 Jogi and Mpala. Good rainfall on O1 Jogi a few weeks earlier was a likely cause of this, but there is also some indication that elephants on these ranches tend to form larger herds before moving off to the north in October-November.

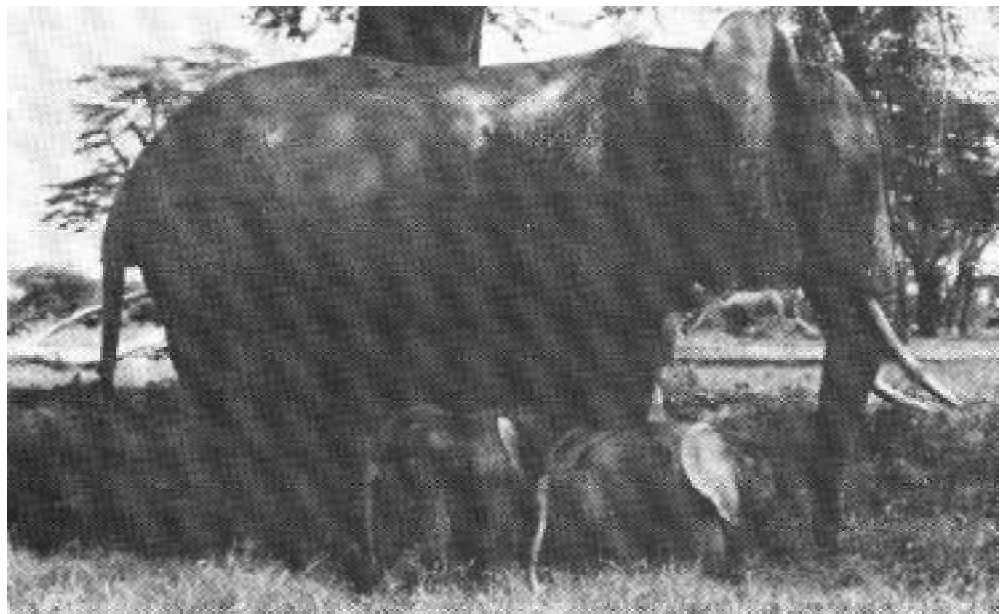
The results of the count indicate that the density in the whole area covered was 0.22 elephants per km and this figure rises

to 0.27 per km² if settlements are excluded; ranch-land had 0.41 elephants per km². Although these figures are amongst the highest for any unprotected areas in Kenya, the density is similar to that existing today in Tsavo National Park after years of poaching, and merely a fifth of the value there when concern was expressed about destruction of habitat. It therefore seems likely, especially in view of the seasonal movement, that damage to vegetation caused by elephants in Laikipia is a local phenomenon, and the animals are not at a high enough density to make a serious impact over the whole area.

The lack of precision of KREMU counts makes it difficult to detect trends in population size. However, it is surprising there is not more evidence of an increase in numbers considering the low intensity of poaching in the area and a high rate of breeding in at least the last two years. It does appear that there have been around 2,000 elephants in the Laikipia area throughout the past decade. Assuming this lack of increase in the population is a real phenomenon, the cause may lie in the northwards movement of the Laikipia elephants. Possibly there has been heavy poaching every time they move north, but this seems unlikely in view of the normal age structure that exists. Another explanation is that more elephants are spending the whole year in the northern areas in response to reduced poaching pressure. If this is the case and the trend continues, the elephants return to their traditional home might well solve many of Laikipia's problems.

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Estella with her twins, Equinox and Eclipse, in Amboseli

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