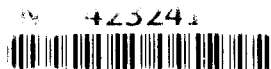


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OBSERVATIONS ON THE ELEPHANT PROBLEM IN SOUTH-EAST TANGANYIKA

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The following observations are relevant to the south-eastern part of Tanganyika. It is possible that at least some of the problems presented in this paper are common to other parts of East Africa, and in particular to the "miombo woodland" areas which are typical of a large part of Tanganyika and Zambia.

Generally speaking, the position of wildlife and its place in land utilization planning is reduced to its simplest form. Three main factors contribute to this situation:

1. The almost complete absence of cattle and other livestock in areas which are important to wildlife.
2. A low density of people over the greater part of the area.
3. Abundant and well-distributed permanent natural water supplies.

The object of the Game Division has been to introduce a system of priorities whereby the situation outlined above is modified in such a way that, (a) wildlife can play a meaningful part in the economy of the country, and simultaneously (b) cause as little friction as possible with agriculture and other human activities.

To achieve this, two fundamental issues have to be accepted—agriculture and the larger game animals cannot exist harmoniously together under the existing pattern of settlement. Second'y, land reserved for wildlife must be free of conflicting human interests and be of sufficiently large area to accommodate all foreseeable development and research projects, and to justify the exclusion of all other areas from development planning. This is basically the position we are in today. To give a clearer idea of the situation, a breakdown of land areas will help:

Wildlife—19,000 square miles.

Other—100,000 square miles.

The area set aside for wildlife is in one block, and the boundaries have been worked out and amended over a number of years to ensure that the area is ecologically complete. It contains, in considerable numbers, all species of mammals recorded from south-east Tanga-

nyika. Reptiles, amphibia, fish and birds are well represented. It follows that a wide range of habitat types are to be found also. This area is known as the Selous Game Reserve.

This paper is not concerned with the ecology and management of the Selous Game Reserve, but rather with the remaining area where there is a clash of interests between man and wild animals and where we consider the latter serve no useful purpose. Over most of this area herbivorous game animals other than elephants are scarce. The Game Division's main task is elephant control and this ranges from straightforward shamba protection to organized schemes aimed at eliminating elephant populations from specific areas.

ELEPHANT CONTROL

The elephant is probably more generally and abundantly distributed in south-east Tanganyika than in any other part of East Africa of similar size. The species is permanently absent only from those sectors which are thickly populated by man—the highland areas of the Uluguru and Matengo ranges, the coastal areas of Dar es Salaam and Lindi districts and the densely populated areas of the Makonde and Rondo plateaux and the adjacent areas toward the coast.

The number of elephant destroyed annually over the past five years will give some indication of the problem confronting the Game Division:

1962—2,843	
1963—2,748	Data obtained from
1964—2,462	annual range
1965—2,519	reports.
1966—3,101	

The annual destruction of elephants from 1950 to 1961 has varied between 1,300 and 1,800 head (annual range reports).

The vast majority of elephants shot on control operations has been in connexion with straightforward cultivation protection. Up to the end of 1961 crop protection was confined mainly to the months February to July. The big increase in elephants killed after 1961 is mainly due to an emphasis on the production of cash crops, thus requiring the peasant

farmer to reduce his acreage of food crops and go hungry, or maintaining it, which involves increasing his total acreage and extending his agricultural activities well into the dry season. The vast majority of peasant farmers have taken the second choice, and so the Game Division has had to extend its elephant control operations by several months each year. Another minor factor which has some bearing on the situation is an expanding human population causing the creation of new settlements and the more recent movement of people back to the land from the towns. The figures for 1962 and 1963 are also inflated by the elephant control scheme which was put into effect to eliminate a large elephant population in the forests close to the Kilombero Sugar Company and other major agricultural schemes nearby.

Methods

There is no solution in sight for the effective control of elephants. We have attempted variations of methods and, although these often prove locally successful they do not alter the overall picture, and they are not even locally successful in so far as permanency is concerned. It has become clear from experience that no control measures are permanently effective unless the area cleared of elephants is occupied by people in large numbers and all adjacent cover is made untenable to them. If there are sufficient people willing to move into an area and do so, this, in itself, will effectively eliminate elephants from that area, but it causes an increase of elephants in neighbouring areas. This happened in 1959 in the northern part of Lindi district when the increased human activity there forced the local elephant population to move north and east into Kilwa and Liwale districts to the detriment of cultivation there.

Elephant control can be divided into two types of operation, namely, straightforward shamba protection, and systematic elimination of elephants from specified areas.

For many years the method adopted has been simply to follow up an elephant from the damaged crops and destroy it. It is clear, however, that the problem is not quite so simple as this, as is evident from the fact that shooting the individual shamba raider has a minimal effect in protecting crops from elephants. It is usually merely a matter of days or even hours before other elephants in the area raid the crops. It has no effect whatever on reducing raiding by other elephants in

neighbouring shambas. The only gain is the appreciation of the owner of the shamba, which is irrelevant to the problem. It has been found that the most effective method to move elephants away from a cultivated area is to try to locate the breeding herds in the vicinity and frighten them out of the area by shooting one or more of their number out of each herd. If the area favoured by these herds contains dense thickets or forest it may be necessary to spend several days making these favoured places untenable to them. It is usual for herds handled in this way to abandon these favoured areas for several months. This does not, however, apply to areas where the greater part of the habitat is covered by dense thicket, forest or long grass.

Most of the actual damage to crops is done by bulls, a large percentage of which are not fully grown. These bulls appear to be attached to female groups, although they do not actually spend much time with them. What is apparent is that these groups of females influence the movements of the bulls. Thus if a herd is frightened right out of an area, the attendant immature bulls, mainly responsible for crop damage, move on too.

So far as straightforward crop protection is concerned, an improvement on the above system is practical if sufficiently well-trained staff are made available. Elephants feed off a very wide range of plants and the reason for their appearance in certain areas is not always clear. However, in some instances a specific item of food to be obtained in an area is the basic attraction. This can vary from fruits of *Sclerocarya berria* or *Borassus aethiopicum*, or stands of young *Pterocarpus angolensis*, or favoured grasses such as *Echinochloa haploclada*. Cultivated crops such as white mtama, and mangoes when in fruit, also appear to influence local movement. By anticipating this it is possible to deal effectively with the elephants as soon as they appear in the area. It is evident that in these operations, once the elephants are deprived, so to speak, of the main attraction, they lose interest and do not establish themselves there again until the following season. It has been suggested that the particular species of plant which is proving attractive to elephants should be eliminated within a certain radius of cultivation. This I consider to be impractical for the simple reason that there are too many of them, and in the case of perennial grasses elimination would clearly be impossible.

The above-mentioned system solves the problem locally and temporarily but it does not alter the overall picture, since elephants driven from one area must go into another. In a land of scattered settlements this means a repetition of similar operations until the crops are harvested. The problem is not solved, and never will be, short of wiping out the elephants or rearranging the settlements. The former is not possible without great expenditure over a long period of time. The rearranging of settlements does, however, offer some hope since the Government is anxious to have people more concentrated for other reasons, i.e. schools, medical facilities, agricultural supervision, expertise, etc.

If settlements are grouped together, then the Game Division would be able to cope with the situation effectively by using the above system of control.

ELIMINATION OF ELEPHANTS

The introduction of a scheme to eliminate elephants from a specific area is only justified if their population is excessive and destroying the habitat, or if major agricultural developments are threatened. The agricultural development can be an influx of people financed or supported by the Government, or a major undertaking such as the 24,000 acre Kilombero Sugar Company.

It is necessary to be clear about what is actually required. Basically it is the elimination of elephants from scheduled areas. Beyond this point is it necessary to exterminate the animals or to frighten them out by destroying limited numbers? In south-east Tanganyika, with the elephant problem as it is, our object is to destroy as many as possible, for to frighten them into adjoining areas merely increases our problems there.

An elephant control scheme of this sort therefore resolves itself into a group of competent staff carrying out intensive operations in a limited area with the object of destroying as many elephants as possible as quickly as possible. It is important that in the early stages of such an operation the staff are worked intensively. It is in the first three or four weeks, before the whole elephant population is thoroughly alarmed, that the greatest reduction in numbers can be achieved. Thereafter it becomes more difficult as the numbers decrease and the remaining herds become more and more timid. In the extensive areas of thicket

and forest in which these schemes have been conducted, there appears to be a hard core of animals that will not abandon the area despite constant persecution. It is necessary to eliminate these completely as they could be an attraction for other elephants. On the conclusion of such a scheme it is essential to have adequate staff remain in the area to prevent or deal with infiltrating elephants. So long as the area remains uninhabited the need to retain staff for this purpose is permanent. If this is not done, elephants which have abandoned the area return. Lack of funds and staff in the Kilwa elephant control scheme in 1962 resulted in three years work being undone in less than a year. By 1965 the elephant population in that area appeared to be as large as before the scheme started.

ELEPHANT POPULATION

There are no figures on recruitment rates. It is, therefore, not possible to assess accurately the population and the effects of control work. It is apparent that over 60 per cent of the population are immature animals, and this is probably a side-effect of control operations. From casual observation I am of the opinion that the elephant population is not much changed from what it was 18 years ago when I first knew this area. Some districts which used to have limited numbers of elephants have none at all now. On the other hand, in other areas there is a definite increase in elephants. Disturbance in adjoining districts is probably the cause of this, rather than a general increase in the population. In the Selous Game Reserve, counts over much of the area indicate a population of between one and two to the square mile. In most settled areas the population is definitely lower than this, but on the Kilombero flood plains it is probably higher. In no area in south-east Tanganyika is the elephant considered to be a threat to the habitat through over-population.

I think it is reasonable to conclude that a decrease in population should have been evident over the years. The numbers of elephants killed on control operations is, therefore, probably not more than the annual recruitment rate. Theoretically the answer to this problem lies in a study of the recruitment rates in the areas where the largest numbers of elephants occur and, incidentally, where most control work is done. If reliable data could be made available on this subject, then it should be possible to

aim at reducing the population by whatever percentage is considered desirable. However, the cost and time required to accumulate sufficient knowledge would probably be unacceptable to the Government. The solution must, therefore, be an accepted policy of priorities which is supported by all bodies concerned with administration in the districts. A co-ordinated effort at all levels of Government is required to induce the formation of bigger settlements which could be adequately protected from raiding elephants and at the same time benefit from the advantages of better administration and other facilities. Such a policy would automatically bring about an improvement in land use in so far as agriculture is concerned. The way would also be open to re-evaluating the utilization of elephants outside the sphere of activities of the agricultural settlements.

It is perhaps relevant to mention here that during the period 1950-1953 the settlement pattern in Mahenge district was made up mainly of a series of concentrated settlements, brought about by the threat of sleeping sickness. During this period adequate crop protection was given by the Game Division resulting in an annual destruction of not more than 300 elephants. Since 1957 these settlements have dispersed, the number of staff on elephant control has had to be trebled and the destruction of elephants has risen to an average of 800 per year, without actually improving the efficiency of crop protection services.

It is a matter of interest to note that in the Selous Game Reserve where no elephants, other than a few trophy animals, have been shot since 1948, the population per square mile is low compared to such areas as Tsavo National Park. There is no evidence anywhere in this very large area to indicate that the habitat is being adversely affected by elephants. At the

same time, the ratio of mature animals to immatures is higher than in the surrounding settled areas.

We conclude that under the unnatural stress of control operations, such as those practised in south-east Tanganyika, recruitment is stimulated and counters high mortality to some extent. A general study of the two areas (i.e. settled areas where large-scale control operations take place, and wildlife areas where interference by man is almost nil) leads me to believe that natality is related to mortality. It appears, therefore, that if the elephant problem is to be solved by reducing populations it would involve control operations on a hitherto unprecedented scale over as short a period as possible. The problem is not one of numbers in excess of the carrying capacity of the habitat, but a straightforward clash between man and beast, brought about by disorganized and largely unproductive scattered settlement over the whole area. A closer grouping of settlements is the only practical solution.

A solution of this sort would result in a decrease in elephant destruction, but I assume that they would continue their artificially induced rate of recruitment for a considerable period. This would lead to a build up of the population, without posing any additional threat to well-protected settlements. Under such conditions the prospects of establishing a cropping scheme in a protein-short area are worth following up, thus converting the elephant into an asset rather than a liability.

The Government is obliged and committed to protecting life and property from the depredations of wild animals. If this problem is not effectively solved, it can induce a state of mind in the public which is apathetic or even hostile to wildlife conservation, which, in turn, can have repercussions on the development of this resource as a meaningful factor in the economy of the nation.