

GAME PRESERVATION IN NYASALAND

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As a result of the broken nature of much of Nyasaland and the diversity of its climate there is a correspondingly wide range of vegetation offering very varied habitats to wild life. From an alpine zone, containing giant lobelias on the Nyika Plateau and mountain grasslands with residual patches of broad-leaved evergreen forest, occurring over all the plateaux above about 6,000 feet, the country drops into the *Brachystegia* woodland. This in its many forms covers most of the main watersheds of the country. The alluvial soils lying along the larger rivers on the plain of Lake Nyasa and down the Shire valley are characterized by mixtures of *Acacia* and *Combretum* species growing in grass which is long and intensely thick. *Copaifera mopane* woodland covers parts of the floor of the Shire valley, whilst on the poor sandy soils of the Lower Shire there are a number of patches of deciduous forests and thickets, some of which are virtually impenetrable except along paths made by the larger game animals. The only approach to open plains is found in the region of Lake Chilwa.

Within a given area the distribution of animal species is governed by the vegetation and, as far as the game animals are concerned, by the structure of the vegetation rather than by the actual composition of its species. For instance, the sable antelope occurs primarily in either *Brachystegia* woodland or in *C. mopane* woodland. Although there is hardly a single species of plant common to these two very distinct associations, they are both characterized by a structure of light open woodland and medium or short grass. Similarly the blue monkey (*Cercopithecus mitis*) inhabits only closed forest, but is equally at home in high temperature deciduous forests at only 200 feet above sea-level and in the bitterly cold wet cedar forests at 7,000 feet or more on Mlanje mountain. No two species, of course, have exactly the same requirements. The vegetational limits of some species such as nyala and puku are very narrow with the result that their distribution is extremely localized although they may be plentiful enough in those small areas where they do occur.

The Mountain Forests include the cedar forests of Mlanje mountain and considerable number of patches of broad leaved evergreen forests scattered widely over Nyasaland. The climate is temperate to cold and the rainfall high. The closed canopy is formed by splendid timber trees and giant parasitic figs

laced by creepers and supporting an enormous weight of epiphytic ferns and orchids. The undergrowth is impenetrable towards the periphery of the forest but movement is fairly easy in the dank and gloomy interior.

These forests are characterized by the presence of small forest antelopes. The blue duiker is common in all of them, together with suni, and some of the forests contain red duiker also. The ubiquitous bushbuck is numerous round the margins and the leopards usually very common. A notable absentee here is the crested guineafowl. Although this bird occurs in similar forest at Mount Selinda in Rhodesia and somewhat less well developed broad-leaved forest in the hills of the Hluhluwe game reserve in Zululand, it occurs in Naysaland only in the low altitude deciduous forests of the Lower Shire.

The majority of the mountain forests are protected as forest reserves whilst there are many patches on the high Nyika non-shooting area and there is also a very nice forest on Chipata mountain in the Kota-Kota game reserve, which contains buffalo and elephant, in addition to the smaller antelope.

The Deciduous Forests and Thickets are distributed in the Chikwawa and Port Herald districts at altitudes below 300 feet. Here the climate is intensely hot even for Africa and the rains are distinctly seasonal. All the species of trees are leafless for a considerable period, but the periods of defoliation of the various species do not always coincide, so that in actual practice there is never a period when every tree is bare. There are several varieties of these forests but they fall into two main types. One is a true forest where the canopy is closed at 30 feet to 50 feet above the ground. The other is a dense impenetrable thorn thicket with a closed canopy at 12 feet to 15 feet only, but with a considerable number of large scattered trees emerging from the scrub.

The most important animal in these forests is the nyala, which in some places is present in quite considerable numbers. Suni are very numerous and red duiker also present. These deciduous forests also harbour elephant and buffalo and many greater kudu. The blue monkey (*C. mitis*) is also numerous but is hardly recognizable as the same species which carries such a beautiful fur in the high mountain forests. Crested guineafowl are plentiful in several of the forests but appear to be absent from others. Black rhinoceros are present in forests on the Mwabi and Dandi rivers but are excluded from the majority of the forests, probably by a combination of shortage of water

and the pressure of human population. These forests are represented in the two game reserves of Lengwe and Mwabvi.

The Brachystegia woodland covers well over three-quarters of the surface of Nyasaland. It is typically an open thornless woodland with grass which is short by African standards; that is to say it is seldom more than about 4 feet high. In its various forms it ranges in altitude from little more than 200 feet above sea-level right up to the margins of the mountain forests and grasslands.

Growing, as it does typically, on the young soils of water sheds, *Brachystegia* woodland is seldom very fertile and is frequently quite the reverse with the result that it is seldom densely populated by humans; but in some areas it carries quite a wide range of game animals. Elephant, rhino, and buffalo, eland, Lichtenstein's hartebeest, roan and sable, waterbuck and Burchells zebra are all animals of the *Brachystegia*, as are also common duiker, Sharpe's steinbuck, and bushbuck. Steep hills or rocky areas afford shelter for klipspringer whilst oribi and reedbuck live in the open dambos. I use the convenient term "dambo" without apology as it refers to a formation which is so very characteristic of central Africa. It is that part of a valley or drainage line from which most trees are excluded by a high water-level in the soil during the rainy season. In effect it is an open grassy glade which may be quite dry for half the year. Where the dambos are a mile or so wide, puku may be present. As the *Brachystegia* covers the largest infertile tracts of country in Nyasaland it is the most suitable land to set aside for game reserves and also as it normally covers the watersheds, very considerable areas have been set aside as forest reserves. The Kota-Kota and Kasungu game reserves and the Mijete non-shooting area represent this vegetation type.

The Combretum-Acacia is an open thorny woodland with tremendous grass 6 feet to 10 feet or more high. It is characteristic of fertile alluvial soils distributed along the larger rivers, on the Nyasa lake plain and on the Lower Shire. On account of its fertility it is almost everywhere densely settled so that it is not possible now to list the animals which once inhabited it. Greater kudu still persist and in some places are responsible for damage to crops, especially cotton. No game species is completely dependant on the *Combretum-Acacia* and it is not represented in any game reserve except for occasional tiny pockets.

The Mopane woodland is usually composed of an almost

pure stand of *C. mopane*, but with a limited number of other species many of which are thorny. The grass is usually short and the visibility good. Sable and impala are the two most characteristic species, but kudu, Sharpe's steinbuck, hartebeest, and waterbuck may also be present. Mopane soils are of very low fertility and are used very little for agricultural purposes. The mopane is represented in the Mwabvi game reserve.

The Mountain Grasslands, which occur on the higher mountains above an altitude of about 6,000 feet, are distributed side by side with the evergreen mountain forests. Typically the more level places are covered with grass and the patches of forest in folds in the hills and on the steep mountain slopes. It is believed that at one time all the grassland was under forest which has since retreated, largely as a result of grass fires. These grasslands are treeless stretches of downland with grass only a few inches high. Bitterly cold and windswept, these high plateaux may sometimes be blanketed in mist for days or even weeks on end. Eland, roan, and zebra are the most characteristic, and cheetah are also present. Mountain grassland is represented in the Nyika non-shooting area whilst the grasslands on Zomba and Mlanje mountains are controlled as forest reserves.

Since all the major vegetation types are amply represented in the existing game reserves and non-shooting areas, it can safely be said that adequate habitat requirements have been provided for almost every species of Nyasaland game animal. As far as the smaller species are concerned, such as most birds, small mammals, reptiles, and invertebrates, the preservation of the vegetation from human interference will be an adequate safeguard for the protection of the species within it. The perpetuation of such species is doubly assured by the formation of forest reserves even if no measures are taken within them specifically in the interests of fauna preservation.

The Lower Shire Game Reserves.—The Lengwe game reserve and the Tangadzi game reserve were formed for the preservation of nyala. In the course of time nyala have ceased to inhabit the Tangadzi forest so that it is now no longer reserved.

The total area of the Lengwe is 50 square miles. The Lengwe thicket itself is a solid 9 square miles of impenetrable thorn in which the only possible channels of movement are along the elephant and buffalo paths. Together with the Pwadze, Bilila, and Nakamba thickets and an area of scattered copses and small thickets, the Lengwe game reserve gives the nyala a true habitat

of about 20 square miles. The rivers in the area are no more than storm drains which may not flow even during the rainy season. Surface wallows and pools are present for three to four months of the year. From about April until the break of the rains in December the Lengwe game reserve is totally without water, but this does not worry the nyala, kudu, suni, or red duiker which simply do without. They drink from the surface pools when these are full but make no effort to leave the forest during the dry season to search for water. Their metabolism must be adjusted to obtain sufficient moisture from their food.

As far as these forest antelopes are concerned the Lengwe is an adequate and satisfactory area, but there is a certain amount of cultivation near by which suffers from the depredations of elephant who take temporary shelter within the reserve. Owing to the small size of the reserve and the absence of water, elephant cannot be resident there and be contained within its boundaries. The elephants of the Lower Shire live in a barren and uninhabitable region around Mijete hill, some 25 miles to the north-west, where they can find ample food and water. For two reasons they periodically move down and take up residence in the Lengwe thicket. Every year about February, when the cobs are beginning to form on the maize, they move into the Lengwe and use it as a base from which to raid native gardens. This is now discouraged by the Game Department who have a team of hunters standing by in an attempt to retain them within the Mijete. At one time native hunters were closing the waterholes in the Mijete in their commercial exploitation of game meat. The result was that streams of game animals including elephant were forced to go elsewhere for their water and could not avoid areas of native cultivation. Therefore, primarily in order to keep the elephants and other animals away from the cultivated Mwanza plain, the Mijete was proclaimed a non-shooting area in 1951.

The Mijete non-shooting area comprises about 150 square miles of low broken stony hills, mostly clothed in a very light woodland of poor *Brachystegia* scrub. Water is present in a few small but good waterholes. Mr. G. D. Hayes has taken a leading part in attempting to improve the water supplies with funds provided by the Nyasaland Fauna Preservation Society, of which he is the secretary. Apart from the elephant, eland, zebra, and sable, roan and greater kudu are present, together with waterbuck. The smaller species include klipspringer and Sharpe's steinbuck.

During the course of tsetse survey during 1950 up the valley of the Tangadzi river some forests were discovered containing nyala and a few black rhinoceros, the only rhino remaining in the Southern Province. The nyala population is not nearly as good as in the Lengwe game reserve, but the shyness of the animals suggests that this is due to poaching rather than to the unsuitability of the area. These forests have, however, several advantages over the Lengwe. Water supplies are good and the soils, not only of the forests themselves but all the country for several miles round, are so poor that the area can never be surrounded by a dense population. The Mwabvi game reserve of 60 square miles was therefore proclaimed during 1951 to cover this area. It contains over 8 square miles of deciduous forest, some rocky *Brachystegia* country, and a tract of mopane woodland. Apart from rhinoceros and nyala, buffalo and kudu, sable and impala are present, together with suni, klipspringer, and Sharpe's steinbuck. Red duiker are probably also present but have not yet been identified.

The Kasungu Game Reserve of about 800 square miles consists of rather level *Brachystegia* country growing on sandy soil. This type of woodland is characterized by being intersected by miles and miles of open grassy dambos with an average width of about 150 yards along all the streams and drainage lines. This greatly facilitates the observation of game and the construction of dry-season tracks. On the other hand the soil of the whole area although not very fertile is still not entirely worthless and doubtless in years to come will be required for settlement. Water supplies are good. Impala, hippo, puku, and the specialized forest antelopes are absent, but every other Nyasaland game animal is present. This is the only place in Nyasaland where oribi occur within a game reserve.

The Kota-Kota Game Reserve is approximately 600 square miles but a realignment of its boundaries is under discussion which may add about another 100 square miles. It consists of broken escarpment country overlooking Lake Nyasa. The highest point of the reserve, Chipata mountain, carries a patch of mountain rain forest whilst the remainder of the reserve is clothed with *Brachystegia* woodland, very well developed in parts. This reserve undoubtedly has by far the finest general game populations left in Nyasaland both in the number of species and of individuals. The Chipata forest adds greatly to the attractions, whilst the Bua river contains the only hippo at present enclosed in reserves. There are very good stocks of

elephant and buffalo and a number of black rhino. All the species of buck which occur in Kasungu are present except the oribi. The three small forest antelope, suni and red and blue duikers are certainly present on Chipata although their occurrence has not actually been confirmed.

The Nyika Non-Shooting Area.—This is a magnificent area of 1,000 square miles of open downland with many relic patches of evergreen forest. It is situated in the remote north where in the past, few people could spare the time for the arduous climb with carriers, especially as it was so cold on the summit that Africans would not willingly go there. The area was in fact a natural game reserve protected by its inaccessibility and climate, and it held very fine stocks of animals.

In 1950, however, a road was made on to the plateau to investigate the question of its commercial development. Unfortunately it was not before the end of 1951 that it was found possible to close the area to shooting.

The High Nyika carries good stock of eland and zebra, roan antelope and sable. All the small forest antelopes are likely to be present. Lions, leopards, and cheetah are all fairly plentiful.

The Puku.—Puku require a rather specialized habitat and can live only in places where vast dambos a mile or so wide occur. Their distribution is therefore very local and, in fact, they have been known to occur in only two places in Nyasaland. One of these was on the dambos of the Lower Songwe river on the Tanganyika border. Here they no longer exist and were probably exterminated during the 1939–40 International Rinderpest Control Campaign. At this time a large quantity of game was destroyed in an effort to form a game-free barrier between Lake Nyasa and Lake Tanganyika. In any case the Songwe is so fertile that they could not have survived for long in the face of intense agricultural development.

The only other locality is on the dambos of the Bua River and its tributary the Rusa in Kasungu district. This area is, unfortunately, outside the Kasungu game reserve but puku are given protection within one mile of the Bua. The dambo of the Rusa with a width of about 2 miles is twice as wide as that of the Bua and one cannot help feeling that in the past the Rusa was the more important part of the habitat. In the protected strip the puku stocks are moderate but are said to be a mere shadow of what they were only a few years ago.

The Nyala.—I am indebted to the South African National Parks Board and to the Natal Parks, Game, and Fish Preserva-

tion Board for a recent opportunity to visit the Kruger National Park and the Hluhluwe Game Reserve, where every facility was given me to examine the various habitats of nyala.

As described above the Lengwe thicket is an impenetrable block of thorn several square miles in extent through which movement is possible only along tracks made by the heavier game animals. This description holds for the Tangadzi forest which also held nyala at one time. No permanent water is present in either of these forests. Nyala use the forests for shelter and during the rainy season, when the grass outside is long, appear to spend most of their time within them. In the dry season they move into the smaller outlying thickets, particularly to places where they can feed on the young foliage of the scandent shrub *Combretum microphyllum* and on the fallen petals of the sausage tree, *Kigelia aethiopica*. Both these grow in alluvial soil near the dry river-beds.

On the Pafuri river in the Kruger National Park the nyala are present in a piece of country which is very similar to their dry season habitat of Nyasaland. They are on a rich alluvial strip carrying some big trees and a few scattered thicket elements but no real solid thicket. Permanent water is, however, available in the Pafuri river and the nyala drink throughout the year. Nyala were not known in this area in the early days of the park but there is certainly a splendid population there now, together with a small number scattered widely throughout other vegetational types, such as in mopane woodland which is the very antithesis of what we have come to regard as nyala country. There is no obvious reason for this but it may possibly be an expression of the long-term population cycle, at a peak for this species at the present time. When the population drops, as it will do, like the zebra and wildebeest herds of Pretorius Kop have dropped, it will be interesting to see how the nyala fare on the Pafuri. Owing to the rigorous protection afforded them in the Kruger National Park they should not disappear again but their numbers are likely to fall to an alarmingly low figure.

In Hluhluwe reserve nyala are living under much more open conditions. I was informed by Mr. Potter that they actually avoid the real solid thickets and concentrate in small valleys where the thorn bush is rather scrubby. In Hluhluwe also the nyala drink daily. At the time of my visit they had withdrawn entirely from their favourite stream, as it had recently dried up. There are very early records of nyala in Hluhluwe but, as at

Pafuri, they were absent in the early days of preservation, the present population having been introduced from Mkusi. I did not pay a visit to the Mkusi thickets, but from descriptions given to me by Mr. Potter and Col. Vincent it is not very dissimilar in structure from the Lengwe and is what I believe to be the true habitat for the species.

I am unaware of the position of nyala on the Rhodesian side of the Limpopo, but apart from them almost the only nyala in existence are the few hundred which are at present within the reserves which I have mentioned. It is my belief that only Mkusi and the Nyasaland forests comprise their true habitat.

The nyala is one of the most rare and most handsome of all the game animals of Africa, and the Lengwe thicket is one of its last natural strongholds. I am convinced that if the area is ever opened up to development it will be a very serious blow to the species.

Blue Wildebeest.—These were once present on the open plains round the southern end of Lake Chilwa. They have, however, long since ceased to exist there, most of their territory now being under cultivation.

As a reply to those who maintain that there is no game left in Nyasaland worth looking at, I would like to give a brief account of a day I spent recently in the Kota Kota reserve. We were camped on the beach of Lake Nyasa under a shady pod mahogany tree near the mouth of the Chiseu river.

I woke as the first streaks of dawn were reflected in the lake and got up to find that the Africans who were with me, a game reserve guard and a game department hunter, were also just stirring themselves. As we had made all preparations the previous evening we were away within a few minutes whilst it was still dark. Within a mile of camp we came across a herd of about twenty-five zebra accompanied by eight or ten hartebeest. A short distance further on, before the sun had yet risen, we met a small breeding herd of elephant led by a tuskless bull. This bull was an old acquaintance of the guard, who told me that he had a bad reputation in the area and was inclined to resent interference from the villages when on his cassava raiding expeditions. I could see that he was in "must" so we kept 50 yards down wind of him and watched. We could see seven animals, including two quite small babies, whilst we could hear the tummy rumblings of two or three more out of sight to our left. They were breaking off the branches of trees and eating the leaves. After about ten minutes the old bull suddenly

became suspicious of our presence and swung off in a semicircle round us with the rest of the herd following at a fast walk. Half an hour later we came on another small breeding herd of six elephants again with two babies.

By now the light was good enough for photography but as my ciné was loaded with kodachrome I was up against a problem which is more acute when photographing game on foot than it is when using a camera from a motor car in one of the more developed game parks. A strong easterly breeze was coming in from the lake making it impossible to get the camera into a position to use the morning light. For a long time I tried to get into a favourable position but the wind beat me and the elephants moved off.

After passing a family of warthog and a couple of duiker we met an elephant calf all on his own hurrying along a path. He had evidently got left behind by the herd and he was wasting no time in trying to catch up again. We hurried along a line parallel to his course but 50 yards or so down wind ; but after several hundred yards we lost touch and, deciding that the herd was moving fairly fast, gave up the chase.

On reaching the Msenjere river at about nine o'clock we turned down the stream. After putting up two bushbuck and some more herds of zebra and hartebeest we decided not to disturb the game any more but to wait until the afternoon when the light would be more favourable for photography. We therefore crossed the Msenjere and swung in a wide circle to come back on the stream about two miles higher up. We passed a lot of fresh buffalo spoor, of herds which must have exceeded fifty or sixty head, and three times crossed the fairly recent spoor of rhino. In a shady spot on the river we cooked a pot of tea, had lunch, and lay up until about three o'clock.

Almost as soon as we started back down the river we ran into three elephant bulls. By now the light was behind us and the wind still blowing in from the lake so that I managed to get some close-up shots before one of the bulls came across to see what was going on and we had to beat a hasty retreat accompanied by much joy and hilarity. We arrived back in camp just before sunset in time to have a bathe in the lake, having seen more zebra, hartebeest, warthog, and Sharpe's steinbuck on the way.

I think that most readers will agree that the day was well spent and that I had not much to grumble about, having seen

a considerable quantity and variety of game on approximately a 12-mile walk.

Nyasaland then, is a country which has a varied and interesting game fauna. When Livingstone first sailed up the Shire river he entered in his diary that he could from his boat see 800 elephants, spread over the marsh a little above Chiromo, and he named the place the Elephant Marsh. The position to-day is very different. The African population has grown enormously, due partly to normal reproduction and partly to immigration from Portuguese territory, so that Nyasaland has a population far more dense than any other east or central African territory. Nyasaland is, in fact, in a position as regards the preservation of her fauna which will be reached sooner or later by all her neighbours. As the population increases so the game must be forced back.

Except for the few species which can adapt themselves to survive in the proximity of man, the game outside the reserves is doomed and, indeed, as far as the southern and central provinces are concerned the end is already in sight. In ten years at the very most no game licences will be purchased as there will be no game left to shoot. Within the reserves although stocks are not comparable to the Kruger National Park, there still remain adequate numbers of all species which will not take long to repay effective protection. Her progress in fauna preservation is being watched with anxious interest not only by neighbouring territories but by interested persons all over the world. Nyasaland has reached this stage at a disadvantage. Her game reserves have never been developed as a tourist attraction so that visits to them cannot be undertaken without somewhat arduous journeys on foot which few people except poachers are prepared to take. There is therefore an almost complete ignorance of the game reserves. Nyasalanders will talk for hours of their experiences in the Kruger National Park or the Nairobi National Park without realizing that it is quite unnecessary to travel a thousand miles across Africa to see a lion.

The Lengwe game reserve is quite level whilst neither the Kasungu nor Mwabvi reserves are at all hilly, so that the construction of dry season roads would present no difficulty. There are parts of the Kota Kota reserve, especially on the lower part of the Bua and the Msenjere and Khonde areas, where road construction would also not present any serious difficulties. Much of the Kota Kota reserve, however, is on the escarpment whilst the Mijete is in somewhat broken country, so that road

construction, although not impossible, would be expensive. A road has already been made over the Nyika. The trouble is that for the development of tourist facilities in game reserves money is required and Nyasaland is far from being a wealthy country.

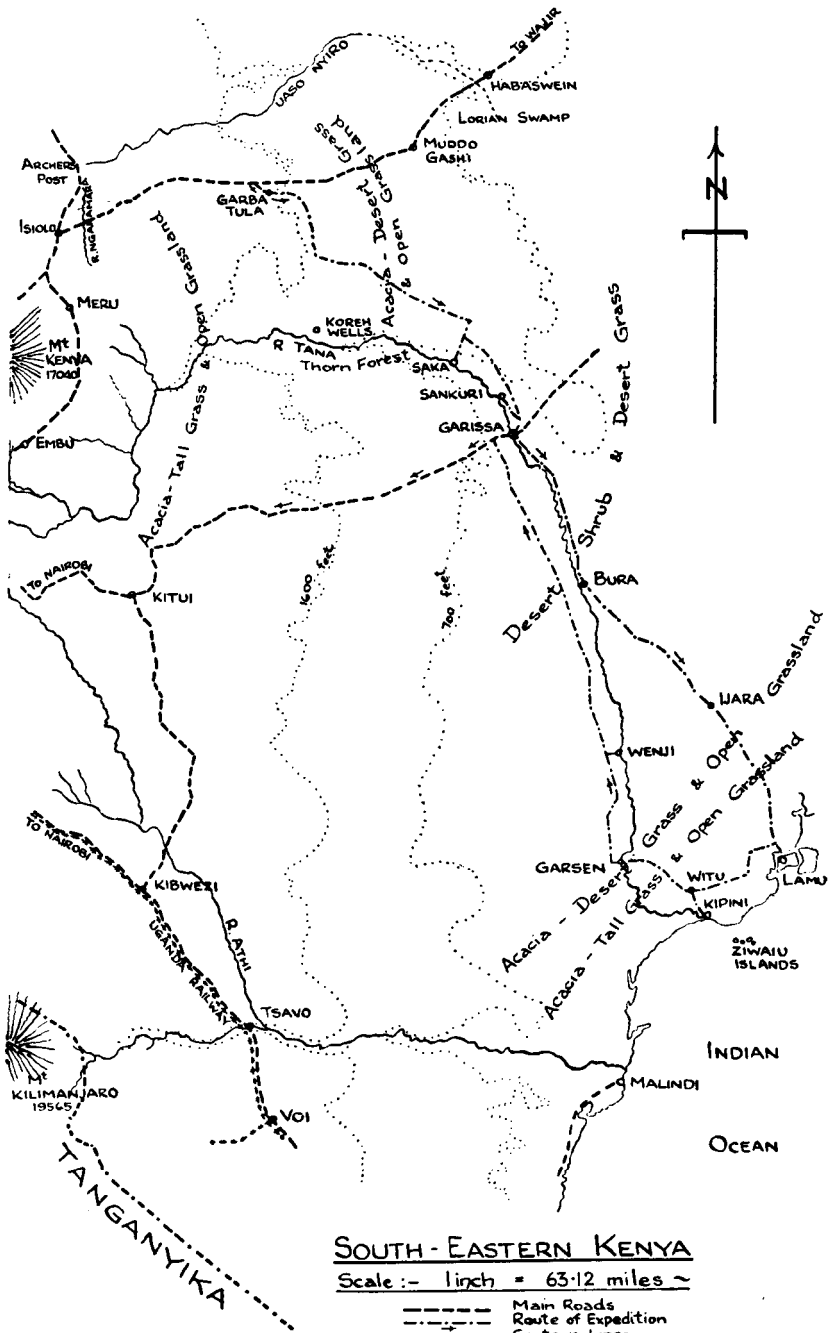
APPENDIX

SUMMARY OF THE DISTRIBUTION OF GAME ANIMALS WITHIN THE NYASALAND GAME RESERVES AND NON-SHOOTING AREAS

SPECIES	GAME RESERVE				NON-SHOOTING AREAS	
	Lengwe	Mwabvi	Kasungu	Kota-Kota	Mijete	Nyika
Buffalo (<i>Syncerus caffer</i>).	+	+	+	+	-	+
Bushbuck (<i>Tragelaphus scriptus</i>).	+	-	+	+	+	+
Nyala (<i>Tragelaphus angasi</i>).	+	+	-	-	-	-
Kudu (<i>Strepsiceros strepsiceros</i>).	+	+	+	+	+	-
Eland (<i>Taurotragus oryx</i>).	-	-	+	+	+	+
Reedbuck (<i>Redunca arundinum</i>).	+	-	+	+	+	+
Puku (<i>Adenota vardoni</i>).		Protected within 1 mile of Bua				
Waterbuck (<i>Kobus ellipsiprymnus</i>).	-	-	+	+	+	-
Common duiker (<i>Sylvicapra grimmia</i>).	+	+	+	+	+	+
Red Duiker (<i>Cephalophus natalensis</i>).	+	P	-	P	-	P
Blue Duiker (<i>Gueveia caerulea</i>).	-	-	-	P	-	P
Roan (<i>Hippotragus equinus</i>).	-	-	+	+	+	+
Sable (<i>Hippotragus niger</i>).	-	+	+	+	+	+
Hartebeest (<i>Alcelaphus lichtensteini</i>).	+	-	+	+	+	+
Impalla (<i>Aepyceros melampus</i>).	+	+	-	-	-	-
Suni (<i>Nesotragus livingstonianus</i>).	+	-	-	P	-	P

Note :- + = Present.
 - = Absent.
 P = Unconfirmed Probability.

SPECIES	GAME RESERVE				NON-SHOOTING AREAS	
	Langwe	Mwabvi	Kasungu	Kota-Kota	Mijete	Nyika
Klipspringer (<i>Oreotragus oreotragus</i>).	—	+	+	+	+	+
Oribi (<i>Ourebia ourebi</i>).	—	—	+	—	—	—
Sharpe's Steenbuck (<i>Nototragus sharpei</i>).	+	+	+	+	+	—
Elephant (<i>Loxodonta africana</i>).	+	—	+	+	+	—
Hippopotamus (<i>Hippopotamus amphibius</i>).	—	—	—	+	—	—
Black Rhinoceros (<i>Diceros bicornis</i>).	—	+	+	+	—	—
Burchell's Zebra (<i>Equus burchelli</i>).	—	—	+	—	+	+
Lion (<i>Felis leo</i>)	+	—	+	+	+	+
Leopard (<i>Felis pardus</i>).	+	+	+	+	+	+
Cheetah (<i>Acinonyx jubatus</i>).	—	—	+	+	—	+
Total species .	14	18	19	22	15	16



D.P. Graham 1953